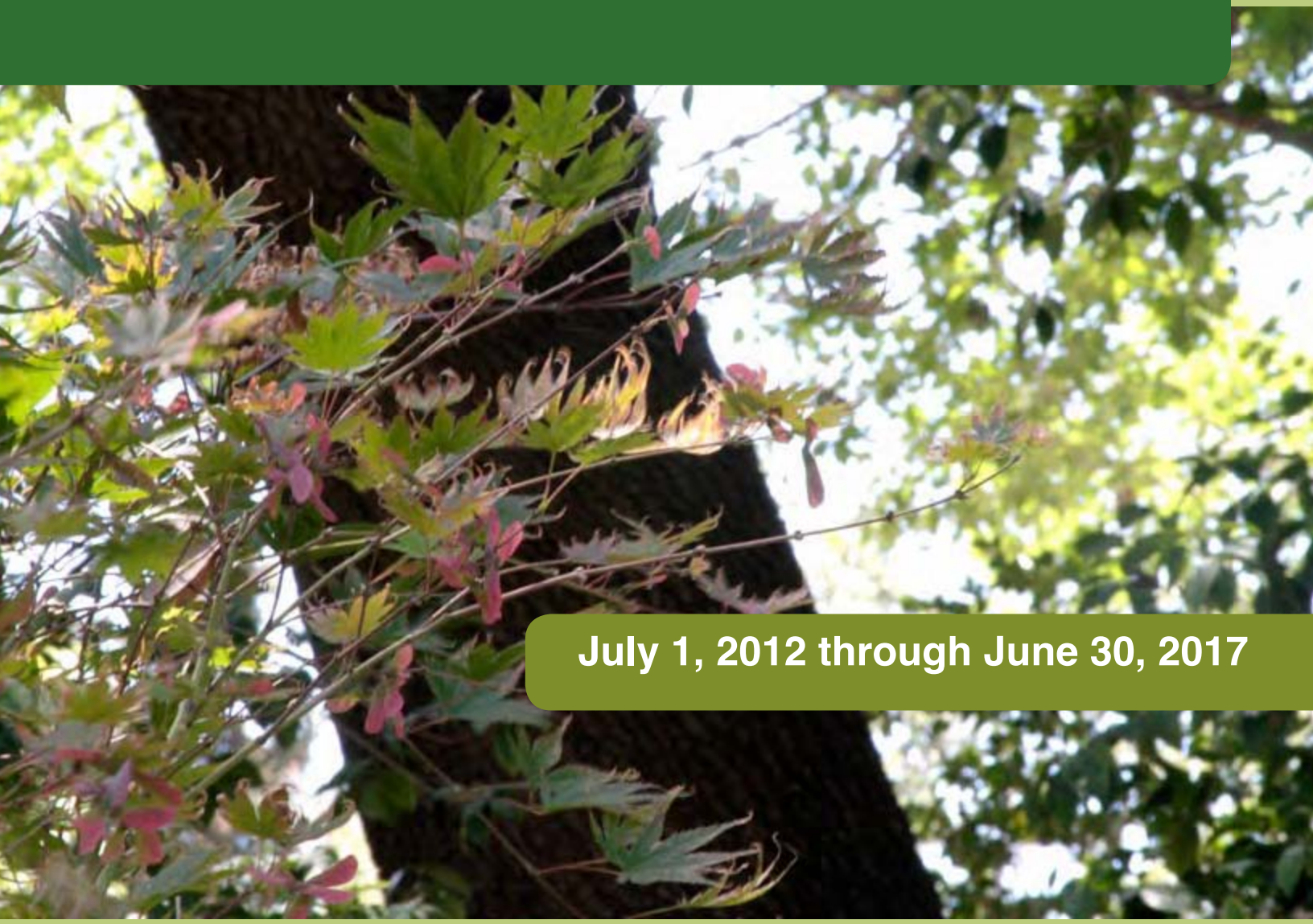
Urban Forest Management Plan

for the

Resource Conservation Center



July 1, 2012 through June 30, 2017

RCRCD

Riverside-Corona Resource Conservation District

Funding provided by the

USDA Forest Service

Through the California Department of Forestry and Fire Protection

Urban and Community Forestry Program

Urban Forest Management Plan

for the

Resource Conservation Center

For October 1, 2012 through December 30, 2017

Prepared for: the Riverside-Corona Resource Conservation District (RCRCD)

4500 Glenwood Drive, Riverside, California 92501

At the corner of 14th Street and Glenwood Dr. near downtown Riverside and at the base of historic Mt. Rubidoux, a wildland urban park

Prepared by: Diana Ruiz and RCRCD Staff

Plan approval date and/or date of final draft: November 7, 2012

Approved by: Shelli Lamb, District Manager

Acknowledgements

RCRCD greatly appreciates the assistance of Dave Roger, Dr. Fred Roth and Nancy Humenik Sappington of the **Inland Urban Forest Council** and the support of the **USDA Forest Service** and the **California Department of Forestry and Fire Protection (CALFire).**

Executive Summary

This guiding plan ensures the health and survival of the Resource Conservation Center's urban forest and is a tool for efficient and cost-effective management.

In this Urban Forest Management Plan (UFMP), the Riverside-Corona Resource Conservation District has assessed resources, evaluated issues and strategies, and developed the following goals with objectives and planned actions:

- Establish and maintain optimal levels of tree canopy and understanding vegetation to maximize ecosystem benefits provided by the urban forest (maintain air quality, reduce energy use, moderate storm water runoff, support pollination and beneficial insects, provide a pollution-free environment for visitors, and more).
- Maintain and conserve appropriate trees in a healthy condition through good management and cultural practices.
- Establish and maintain optimum diversity in terms of tree species and age.
- Manage the Resource Conservation Center's urban forest efficiently and cost-effectively using the UFMP as a guide.
- Secure stable sources of funding for management of the Center's urban forest.
- Determine staffing and coordinate efforts under the direction of the District Manager.
- Complete the development of Phase 1 of the Land Use Learning Center, including the installation of all urban forest understory vegetation.
- Expand education and outreach programs and foster stewardship of the region's urban forests.
- Plan future projects for Phase 2 development of the Land Use Learning Center.
- Preserve and protect onsite heritage trees

The Riverside-Corona Resource Conservation District (RCRCD) considers this plan a "living document" to be adapted according to changing conditions, evolving needs, growing scientific knowledge, and fluctuating funding levels.

This guide also documents where we've been, where we are in 2012, and where we are going in terms of urban forest management, site development and public education.

What is Urban Forestry?

"Urban forestry is the careful care and management of tree populations in urban settings for the purpose of improving the urban environment. Urban forestry advocates the role of trees as a critical part of the urban infrastructure."
(Adapted from en.wikipedia.org/wiki/Urban_forestry)

"Urban forestry is the management of trees for their contribution to the physiological, sociological, and economic well-being of urban society."
(Adapted from Grey and Deneke, 1986)

Table of Contents

Vision Statement

A healthy, sustainable* urban forest will be established and carefully managed at RCRCD's Resource Conservation Center, including the Land Use Learning Center (LLC) which serves as a demonstration and educational resource for the inland regions of southern California.

Mission Statement

The Riverside-Corona Resource Conservation District's mission is to use the Resource Conservation Center as a demonstration of sustainable management appropriate for inland southern California ecosystems. The conservation plantings and demonstrations will help educate the public about the benefits and value of trees in urban, agricultural and native ecosystems and will empower land owners to use those same practices on their own properties.

* Sustainability is the ability to preserve the integrity of natural resources and systems, so they are neither depleted nor damaged, ensuring future generations a healthy and clean environment.

Introduction

This Urban Forest Management Plan (UFMP) covers the area and activities of the 9-acre Resource Conservation Center including the Land Use Learning Center (LLC). For the purposes of this plan, the urban forest is managed as two units: The 3-acre Land Use Learning Center and the 6-acre historic campus.

This plan will guide RCRCD in sustaining the facility's urban forest. The five-year plan identifies resources, issues, needs and opportunities, and is a tool for discussion and evaluation. The UFMP outlines long-term goals, then objectives that provide desired outcomes, but are more specific and limited in scope. Finally, the plan defines actions, or steps toward for achieving goals. The plan helps RCRCD prioritize actions and evaluate strategies, including methods to acquire funding.

The main complex of the 6-acre historic campus includes offices, plant nurseries and research facilities. The facility includes a variety of trees that have been planted over time since the early 1900s. The trees that are planted throughout the 6-acre complex provide shade, habitat value and other ecosystem benefits. Since acquiring the facility in 1999, RCRCD has continued to plant trees for shade and screens.

The Resource Conservation Center is a demonstration of "reuse". To date, many of the antiquated office buildings have been repurposed and renovated and are being used as offices for RCRCD and agencies with complimentary missions. A native plant nursery and fish/ amphibian tanks have been modified and retrofitted from earlier research facilities.

The historic campus and 3-acre Land Use Learning Center (LLC) are managed separately and for different purposes. The LLC is a garden for the purpose of demonstrating methods to sustain natural resources in the three main land uses of southern California:

Native Habitats Urban Areas Agriculture.

Trees are planted throughout each land use area for a variety of purposes.

The "Arbor Trail" is the portion of the Urban Area that is dedicated to telling the story of urban forestry, tree care and the value of trees.

Public education is an inherent goal of RCRCD, so it is important that the Resource Conservation Center's plan and management provide good examples. The purpose of creating the Center is to foster community conservation efforts and to empower Southern Californians to practice natural resource stewardship at home, at work, and in the community. For this reason it's essential that the facility, specifically the Urban Area including the Arbor Trail, demonstrate and interpret proper urban forest management, tree care, and appropriate tree species selection for the education of the population and ultimately for the improvement of inland urban forests.

The Land Use Learning Center is a dedicated area to use for education and volunteer programs. The purpose of the LLC is to empower urban land users to employ sustainable management practices on their own properties, which will help improve urban ecosystems of inland southern California. The demonstration garden will be open to the public and to school/youth groups, and will have an estimated 20,000 visitors per year. A docent program of volunteers will conduct tours and hands-on activities. Groups such as the Inland Urban Forest Council, California Native Plant Society, Master Gardeners and Master Composters plan to use the amphitheater and facility to present programs, as well.

For homeowners, the demonstrations will be open on weekends, and we will provide resources for planning urban yards in terms of tree selection, siting and care. For sustainability purposes, our tree selection demonstrates the use of drought tolerant species and the importance of native vegetation in providing yard habitat for urban-adapted wildlife.

Uses of trees include windbreaks, hedgerows and locally appropriate species for providing food for people and wildlife. The Native Habitat Area demonstrates the importance of native trees in adjoining wildland areas, such as wildland parks, and for the green infrastucture of the urban environment.

For schools and homeschoolers, we plan programs, field trips, and stewardship activities. For Citizen Scientists, we plan data collection about trees, water quality, pollinators, native plants and animals.

The LLC demonstrations will serve the greater Riverside-San Bernardino areas. In 2010, western Riverside County alone had a population of 1.15 million residents. The region led California in population growth, and numbers are predicted to grow by 1 million from 2008-2015. In 2002, the Inland Empire (IE) was identified as the “most sprawling metro area” in the US. Less than 1% can be effectively served by mass transit. Air quality in Southern California is among the poorest in the nation, largely due to fossil fuel use by vehicles. Natural resources suffer adverse impacts as a result of land conversion pressures, pollution, transportation, and more.

The Arbor Trail is part of the Urban Area, which also includes four demonstration yards with trees. The Urban Area trails and tree plantings were installed with funding from Metropolitan Water District and RCRCD at a cost of approximately $34,900. Drought-tolerant, locally appropriate tree species were planted, and name identification signs were placed for each species. All trails in the LLC have been installed to facilitate wheel chair access. As of 2010, over $300,000 had been spent to develop the LLC, of which $144,000 came from partners and grants.

The Arbor Trail will be a regional resource for the Inland Empire, western Riverside and San Bernardino Counties. Nineteen interpretive signs were developed and installed thanks to a Prop 84 grant administered through CalFire. The signs explain:

- the value of trees
- appropriate species for inland southern California
- using the right tree for the right place
- the greenhouse and urban heat island effects
- proper tree care: planting, staking, pruning, irrigation
- urban forestry practices
- invasive tree species
- using trees to control climate/wind, noise, trap pollutants, save energy, and more.

Why do we need a plan?

This Urban Forest Management Plan (UFMP) will ensure the health and survival of the Resource Conservation Center's urban forest over the long term. The site-level plan will aid with the development and ongoing management of the Land Use Learning Center, which is scheduled to open to the public in 2013. The UFMP will help RCRCD be more efficient and effective in using very limited funding. The plan will help with organization, scheduling of personnel, and cost-effective management.

Benefits Provided by Trees

According to US Forest Service's Pacific Southwest Research Station, a large tree in Riverside provides approximately $3,880 in environmental benefits during its lifetime. That is more than a 300% return on investment. Studies have shown that 100 large mature trees remove 14 tons of carbon dioxide (CO2) and 351 pounds of other pollutants from the air. They also catch about 223,800 gallons of rainwater.

See: "Trees Pay Us Back in the Inland Empire Region" at http://www.fs.fed.us/psw/programs/uesd/uep/products/18/804uesd_uep_tpub_InlandEmpire.pdf

The U.S. Department of Agriculture's Urban Forest Research Facilities have studied a variety of trees and quality of life benefits, including:

- increased property values
- improved traffic safety
- increased student performance at shaded schools
- improved recovery time where trees are visible through hospital windows
- reduced domestic violence at tree-lined housing developments.

Studies have also shown that people prefer to shop where there are trees, and that trees reduced energy usage and save up to 23% on air conditioning costs.

The greater inland region will benefit by having an improved urban-ecosystem with energy savings from cooler temperatures, water savings from planting appropriate species, improved air quality, increased water infiltration, reduced flooding and erosion, increased habitat for urban-adapted wildlife, increased pollination, more beneficial insects, bats and birds, and more.

Status of the Urban Forest

5.1 Historical Context

RCRCD acquired the facility through a 35 year lease from USDA in 1999 and set out to gradually retrofit and reuse components of the research complex.

The property was once part of the original Citrus Experiment Station that was founded by citrus growers in 1907. Riverside is the birthplace of the California citrus industry and enjoyed the highest per capita income in the US in the early 1900's due to citrus exports in refrigerated box cars. Due to our citrus heritage, the Land Use Learning Center includes an area which demonstrates sustainable agriculture with conservation measures.

It is fitting that the LLC be located at the base of Mt. Rubidoux near downtown Riverside. The city's urban forest is a good example for other inland cities that have failed to produce adequate canopy cover in hot, dry southern California. City founders understood the value of urban trees. A variety of species from around the world were planted along city streets and in parks. Two of the Arbor Trail signs include historical information about early tree planting efforts and Riverside's first tree warden.

PHOTO COURTESTY OF THE RIVERSIDE METROPOLITAN MUSEUM

John Henry Reed (1832-1920) is best known as Riverside's first Tree Warden.

In 1939 the USDA Agricultural Research Service acquired the property for its US Salinity Laboratory. The construction of Building A was a WPA work project.

Until 1995 the property served as a field and laboratory research facility for studies on the effects of excess soluble salts on crop production, and later on the effects of heavy metals on crops. When the Salinity Lab vacated the property around 1995, it commissioned a company to conduct an environmental site assessment to determine the potential for environmental liabilities on the site. The long history of chemical use, mercury spills, and hydrocarbon and pesticide residues had created the potential for environmental contamination. Most of the areas of concern were found to be non-hazardous. A few contaminants were removed.

RCRCD acquired the property after it sat empty for three years and began to renovate buildings, including for energy conservation and handicapped-accessibility. Outdoor solar lighting, native plant landscaping, and permeable surfacing materials were installed at the parking lot. Renovations have gradually continued since 1999.

Today, other agencies housed onsite include:

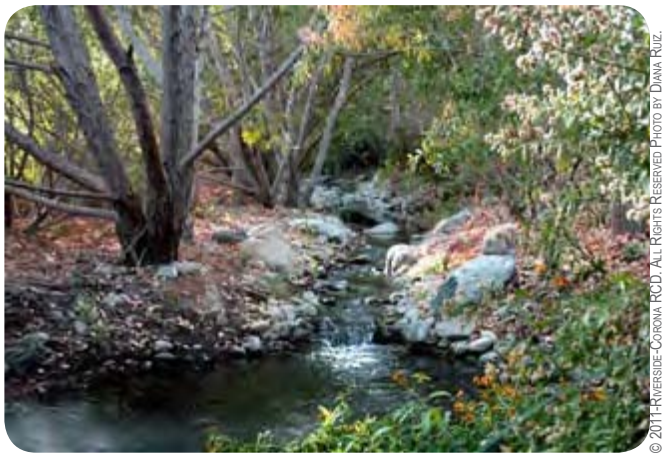
- USDA Natural Resources Conservation Service (NRCS)
- California Department of Food and Agriculture's research project to control the Glassy-winged Sharpshooter, a Pierce's Disease vector (Pierce's Disease is a bacterial malady of grapevines which also has the potential to devastate citrus, alfalfa, oleander, and almond crops.), and the plant and wildlife monitoring branch of the Western Riverside County Regional Conservation Authority.

Conservation agencies and grassroots organizations, such as the Inland Urban Forest Council and California Native Plant Society use a renovated conference room for programs, training, and meetings.

When development of the LLC began, the Native Habitat Area was an empty field that was disked to control weeds. Much of the Urban and Ag areas were riddled with debris, wires, tunnels and concrete cells from prior research activities. After the debris was removed and tunnels filled, portions of the Land Use Learning Center have been under development as funding has become available.

"Form follows function" is a principle of design that simply means the shape of a building or object is primarily based on its intended function or purpose. This describes the design of the Land Use Learning Center (LLC). Each demonstration area has an intended purpose, and trees provide the architectural structure for each area. Each space demonstrates appropriate plant species and management according to its intended "land use".

For the Native Habitat Area, a stream course was dug and lined with plastic. Gravel and rock were laid on the stream bottom and banks to create fish breeding habitat. A bridge and a water-recirculating pipe and pump system were installed. Water is filtered through a series of bio-filters. Today, the riparian plant community includes a recycling stream (300 foot long) for the study of native fish, including the threatened Santa Ana Sucker.



The LLC now includes handicapped-accessible trails, interpretive signs, and an amphitheater.

Of historical note: RCRCD conducted a biomass reuse project in 2000. When city trees were removed from streets or parks, they were brought to the Center for milling into lumber, rather than being burned as firewood or dumped at landfills. For the pilot project the California Department of Forestry and Fire Protection loaned the RCRCD a portable Woodmizer sawmill. The City of Riverside's urban forester coordinated log deliveries with the City's arbor care contractor. Members of the Inland Woodworkers and Riverside Chip Chuckers volunteered their time to mill and catalogue lumber. The volunteers were given pieces of the high quality hardwoods for wood carving and construction projects.

Community Partners

Numerous scientists, businesses, agencies and individuals have contributed expertise, time and financial support to the Land Use Learning Center project. The Arbor Trail was planned with assistance from the Inland Urban Forest Council, the California Department of Forestry and Fire Protection, local arborists, soil conservationists, and landscape architects. Master Gardeners, Kiwanis and other volunteers helped plant the Urban Area, including the Arbor Trail.

The LLC has broad support from the community, City and County of Riverside, and numerous federal and state agencies. We have technical experts on staff, on site and in the community who will provide workshops, training and technical expertise for garden management and programming, including our natural resource manager, restoration ecologist, invasive species experts from the Weed Management Area, scientists from CA Department of Food and Ag, UCR and neighboring colleges, entomologists, etc. We also work closely with the Riverside Metropolitan Museum on joint education and Citizen Science projects.

5.2 Environmental Context

Water

Most of Riverside's water supply comes from groundwater resources pumped from local area wells in the Bunker Hill, San Bernardino, and Riverside Basins.

Supplemental irrigation is required for tree establishment and to maintain tree health. However, we do very little irrigating of native species in the Oak Woodland, Coastal-Sage-Scrub and Chaparral plant communities during the dry months. Native plants grow during the rainy season and many go dormant during our hot dry summers.

Temperatures and Climate

Riverside receives an average of 10.4 inches of precipitation annually with most of it occurring in the winter and early spring, especially January through March, with February usually being the wettest month.

Riverside experiences a semi-arid Mediterranean climate with hot, dry summers in the 90s frequently exceeding 100 °F, but with somewhat low humidity. In the winter, high temperatures average in the upper 60s, but may not rise above 55 °F during rainy days. January, the coldest month, averages high / low temperatures of 68 °- 43 °F, while August, the hottest month, averages a high / low temperatures of 95 °- 64 °F.

Climate Zones

Resource Conservation Center site: USDA Hardiness Zone 9b and Sunset Zone 19
Regional climate from the Sunset Garden Book:

Zones 18 and 19 are classified as interior climates. This means that the major influence on climate is the continental air mass; the ocean determines the climate no more than 15 percent of the time.

Zone 18: Above and below the thermal belts in Southern California's interior valleys
Zone 18 never supplied much commercial citrus, but home gardeners who can tolerate occasional minor fruit loss can grow citrus there. Over a 20-year period, winter lows averaged from 22 to 17°F. The all-time lows recorded by different weather stations in Zone 18 ranged from 22 to 7°F.

Zone 19: Thermal belts around Southern California's interior valleys
Like that of neighboring Zone 18, the climate in Zone 19 is little influenced by the ocean. Many sections of Zone 19 have always been prime citrus-growing country, especially for those kinds that need extra summer heat in order to grow sweet fruit. Likewise, macadamia nuts and most avocados can be grown here. The Western Plant Encyclopedia cites many ornamental plants that do well in Zone 19 but are not recommended for its neighbor because of the milder winters in Zone 19. Extreme winter lows over a 20-year period ranged from 28 to 22°F and the all-time lows at different weather stations range from 23 to 17°F. These are considerably higher than the temperatures in neighboring Zone 18.

Soils

Soils are Pachappa fine sandy loam (PaC2), 2-8% slopes. This soil is deep, well-drained and developed in predominately granitic alluvium. These well-drained soils are generally low in organic matter and nitrogen. Fortunately, many native plant species thrive in less fertile soils.

Due to the prior use of the site as a research facility for soil salinity and heavy metals, the soils have been leached over time and some of the planting area is composed of fill material from re-grading.

Most soils in the LLC have had wood chip mulch applied about 2 inches thick to help reestablish soil life and develop topsoil.

Native Vegetation

The location historically supported grass and the coastal-sage-scrub plant species. Most of the CSS species are flourishing, while we have had difficulties establishing some chaparral species. The coastal-sage-scrub plant community naturally occupies coastal foothills and bluffs, inland valleys, and mountain slopes below 3,000 feet and below the chaparral. Compared to chaparral, coastal sage scrub is dominated by low, open scrubby vegetation. Many species are aromatic, such as California sage brush and several species of sage, and have thin leaves that become dormant, and partially to completely deciduous during the summer dry season. Precipitation is light, varying from 10-20 inches per year. Coastal-sage-scrub is considered to be an important natural habitat supporting a diverse array of wildlife and a diversity of forb species that occur in open areas and after fire. Many species either re-sprout or have seeds that germinate after fire. Over the past ten years, four locally important plant communities have been established in the Native Habitat Area of the LLC: Coastal-Sage-Scrub, Oak Woodland, Riparian and Chaparral. Only native species have been planted in the area, however a few remnant trees are growing on the edges of the LLC: a large Eucalyptus (approximately 100 years old), a few old pepper trees, and cork oak street trees along 14th Street.

Fire

Although this site is not particularly susceptible to fire, adjacent Mt. Rubidoux and much of southern California suffer from frequent wildfires. Part of the interpretive signs and publications will focus on fire issues, preventing development into chaparral hazard areas, and ways that homeowners can create defensible space by managing native and drought tolerant plants.

5.3 Tree Resource Assessment

A survey was conducted from August-October, 2012 to assess tree resources. (Appendix A). Approximately 227 trees were identified, not including the trees of the Agricultural Area. When the Ag Area is planted out, the existing grove and new grove in development will add an additional 70+ trees.

Facility Trees

About 100 trees are spread throughout the 6-acre campus. These trees vary in age from about 100 years old (estimated) to recently planted. In 2012, the tree canopy of the business complex is approximately 21%. Some trees have been removed, but more have been planted over the years to shade parking lots, buildings and research facilities:

- For the main parking area, we wanted to demonstrate the use of native plants in landscaping. Native Sycamores, *Platanus racemosa* and *Cercis occidentalis*, Western redbud were selected to provide shade.
- In 2010, several Raywood Ash trees were planted near Building F for shade and as a screen between the nursery fence line and Braemar Apartments.
- A new (unpaved) overflow parking lot has been leveled adjacent to the Ag Area. Oaks were planted in 2011 to provide for future shade.

Heritage and Legacy Trees

Heritage trees are trees that are awarded special status due to their age, size, rarity or other factors. The tree survey identified onsite heritage trees due to their size and age:

- The largest tree on the campus with a 43" DBH (diameter at breast height) is a *Pinus halapensis* (#146) which shades Building A and the main parking lot. The roots were extensively pruned for the installation of a handicapped-entry for the lower floor.
- In the front yard a *Cinnamomum camphora* (#140), Camphor tree with 30" DBH is a memorial tree dedicated to Stan Cooley who served on the RCRCD board for over 50 year.
- Two *Eucalyptus sideroxylon* (#25), Iron Bark Eucalyptus trees along Glenwood Drive were probably planted when the original Citrus Experiment Station was built around 1907, as similar trees used to be in the front yard of that historic building across the street.
- Deodar Cedar (#139) with 23" DBH in front yard.

A camphor tree is a memorial tree dedicated to board member Stan Cooley, deceased.

Additionally three aging, multi stemmed *Schinus molle* peppertrees are located onsite. The peppertrees will not be retained for historical value, because the species has been placed on the invasive species list. One large peppertree will be prioritized for removal, as it is located along the Arbor Trail and is not the kind of species we wish to demonstrate.

A few memorial trees have been planted and labeled in honor of those who have died. The Arbor Trail also serves as the Kiwanis Memorial Grove. To date Kiwanis has identified one *Quercus agrifolia* as the memorial tree for their member Paul Fick who was a tree advocate.

RCRCD planted a *Quercus engelmannii* for Barbara Gallert, a water education colleague, and a Japanese Maple for a former employee Beverly Howard. The Japanese Maple is planted in front of the RCRCD's Building A and is not doing very well as it is not suited for our hot, dry summers. The species was selected because it was the favorite tree of Beverly Howard, RCRCD's former Resource Educator.

Land Use Learning Center Trees

About 130 trees have been planted in the LLC (Native Habitat and Urban Areas) for specific purposes over the past 13 years. For example: riparian willows were planted along the constructed waterway to provide habitat and to shade and cool the water for native fish.

The trees species that have been planted were selected according to appropriateness for each land use. Additional shrub, herbaceous and grass species are listed by land use demonstration area in Appendix B (Urban Area Plant List) and Appendix C (Native Habitat Plant List).

At project onset in 1999, there was nearly 0% canopy cover over the 3-acre LLC. There was a Palm and some perimeter trees, including Holly Oak street trees along 14th Street, two old peppertrees, and a Glenwood Drive Eucalyptus that was probably planted around 1907. The large trees have been left for shade and habitat value until newly planted trees reach adequate heights for bird nesting and perches.

Tree canopy has been assessed for each of the land use areas: Native Habitats, Urban Areas, and Agriculture.

Trees of the Native Habitat Area

A substantial increase in canopy cover has occurred as a result of the development of the Native Habitat Area. Cover has increased from about 1% in 1999 to approximately 68% in 2012. In addition, most of the remaining Native Habitat Area is covered with shrubs. The large shrubs of the chaparral, oak woodland and riparian plant communities help provide canopy and are included in the percentage above, but they were not identified in the tree survey.

In the Native Habitat Area, trees were selected according to their occurrence naturally in four locally-important plant communities: riparian, coastal-sage-scrub, chaparral, and oak woodland.

For the Native Habitat Area, only local native species were selected. Local biologists, entomologists, botanists, and the herbarium curator from UCR were consulted for plant and animal species to interpret for each plant community in plantings, signage, and educational programming.

For the oak woodland, *Quercus engelmannii* was selected because it is scarce and listed in the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants. *Quercus agrifolia* was selected because it is believed to be the most common oak that would have historically flourished in our inland region.

Riparian Species

Acer macrophyllum	big-leaf maple
Alnus rhombifolia	white alder
Platanus racemosa	western sycamore
Populus fremontii subsp. fremontii	Fremonts cottonwood
Quercus agrifolia var. agrifolia	coast live oak
Salix exigua	narrow-leaved willow
Salix goodingii	Goodings black willow
Salix laevigata	red willow
Salix lasiolepis var. lasiolepis	arroyo willow

Oak Woodland Species

Quercus agrifolia var. agrifolia	coast live oak
Quercus engelmannii	Engelmann oak
Quercus wizlizenii var. fructescens	interior live oak
Quercus berberidifolia	California scrub oak

Other Areas

Umbellularia californica	California bay laurel
Juglans californica var. californica	southern California black walnut
J*uniperus californica*	California juniper

All the peppertrees on the campus will eventually be removed, as they are considered invasive and the facility is adjacent to wildlands: Mt. Rubidoux and the Santa Ana River. The large pepper near the biofilters is not very visible from the trail and is very large, so has a lower priority for removal. The row of shrubby peppers along the old internal fence between Building C and adjacent to the Native Habitat Area has a medium priority for removal. As they are multi-stemmed and shorter, they may be able to be removed by staff. Tree and understory infill continues as needed in the Native Habitat Area. Additional understory species are listed in Appendix C (Native Habitat Plant List).

Trees of the Urban Area

With the development of the Urban Area, tree canopy cover has gone from 0% to approximately 27%. This estimate does not include large shrubs (pomegranate hedge, etc.) which do provide additional cover.

The Urban Area includes four styles of yards and the Arbor Trail. For the four themed yards, water-wise and additional qualities were considered. For example, for Yard 4, the Sustainable Backyard, food production was the main concept, so food-producing trees are demonstrated.

1. Habitat Garden

The Habitat Garden provides food, water and shelter for urban-adapted wildlife, such as birds, bats, and lizards. Trees planted in this garden include: *Chilopsis linearis*, Desert Willow and *Vitex angus-castus*, Chaste Tree.

Granite spiny lizard

Many of the plants serve as host plants for butterfly larvae or provide nectar for butterflies and nectar-eating birds, such as hummingbirds. The plants are adapted to seasonal irrigation; their main growing season follows the winter rains. They become dormant during the hot, dry conditions of summer.

The yard is graded to capture runoff, reducing the flow of water into storm drains and increasing the amount of water that infiltrates into the soil and percolates below to underground aquifers. Runoff water becomes available for the plants that fringe the basin, reducing the amount of water needed for irrigation.

2. Native Garden

The Native Plant Garden incorporates local native plant species and cultivated varieties of other California natives. This combination creates visual interest throughout the year. Trees in this yard include:

Cercis occidentalis	Western Redbud
Chitalpa taskentensis 'Pink Dawn'	Pink Dawn Chitalpa
Parkinsonia 'Desert Museum'	Hybrid Palo Verde
Quercus agrifolia	Coast Live Oak

These types of plants are well adapted to local climate and soil conditions, which helps achieve a garden that requires little to moderate water and maintenance. As this garden matures, the variety of plants will provide increased amounts of shade and habitat for urban-adapted birds and beneficial insects. The small trail is composed of permeable decomposed granite to increase water infiltration and reduce runoff.

3. Mediterranean Courtyard Garden

The Mediterranean Courtyard Garden has more order and geometry in its use of plants, paving, and pathways, and borrows ideas from classic Mediterranean gardens. The garden incorporates a relatively large hardscape (hard surfaces, such as concrete) that reduces the irrigated area. When mature, the row of native Bay trees along the fence line will provide a screen and windbreak for people and shelter for birds.

Trees include:

Arbutus unedo	Strawberry Tree
Arbutus 'Marina'	Hybrid Strawberry Tree
Laurus nobilis	Sweet Bay

4. Sustainable Garden

The "Sustainable" Backyard emphasizes efficient and productive investment of resources. A diversity of plants provides food for people and wildlife and supports a variety of beneficial insects that help control pests.

Trees species include:

Prunus dulcis 'All-in-One'	All-in-One Almond
Prunus persica 'California Curl Free'	California Curl Free Peach
Pyrus pyrifolia *'Tsu Li'*	Asian Pear
Prunus 'Royalty'	Royal Apricot
Pistacia verav 'Peters'	Male Pistachio
Pistacia vera 'Kerman'	Female Pistachio

Lawn-substitutes, which require less water and mowing-energy, demonstrate alternatives to traditional lawns. Different types of irrigation systems (pop-up sprayers, rotors, gears, drip) and controllers (timers) demonstrate ways to improve watering efficiency. Composting helps recycle and reuse the trimmings from the yard. The composted waste becomes a rich soil amendment, eliminating the need for purchased, chemical fertilizers. The patio and vine-covered overhead provide a comfortable outdoor room to enjoy the backyard garden. Vegetables and herbs are grown in raised beds to provide fresh, flavorful, and nutritious foods that require no transportation to and from market; thus reducing the use of non-renewable energy (gas and motor oil) and the subsequent air pollution.

Note: *The wooden arbors serve as doorways between themed areas.*

Arbor Trail

Species were selected for ability to survive in the local climate and under harsh urban conditions. Members of the Inland Urban Forest Council suggested species for the Arbor Trail.

Deciduous

Scientific Name	Common Name	
Cercis canadensis	Eastern Redbud	
Cercis canadensis 'Forest Pansy'	Forest Pansy Eastern Redbud	
Chionanthus retusus	Chinese Fringe Tree	
Chitalpa taskentensis 'Pink Dawn'	Pink Dawn Chitalpa	
Ginkgo biloba	Maidenhair Tree	
Pistacia chinensis	Chinese Pistache	
Tabebuia chrysotricha	Golden Trumpet Tree	
Tabebuia impetiginosa	Pink Trumpet Tree	
Quercus engelmannii	Engelmann or Mesa Oak	Local native
Quercus lobata	Valley Oak	Ca native

Evergreen

Arbutus 'Marina'	Hybrid Strawberry Tree	
Geijera parviflora	Australian Willow	
Laurus nobilis	Sweet Bay	
Magnolia grandiflora 'Little Gem'	Dwarf Southern Magnolia	
Quercus agrifolia	Coast Live Oak	Local native

Tree and understory infill continues as needed in the Urban Area's four yards and Arbor Trail. Additional understory species for the Urban Area are listed in Appendix B (Urban Area Plant List)

Design and species recommendations for the Urban Area were provided by landscape architect, professor and author Bob Perry.

Trees of the Agricultural Area

Trees for the Ag Area are in the process of being planted. The empty field has 0% canopy cover. An adjacent block of about 16 trees, mainly citrus, was planted in 1999 from donated stock and is covered with about 78% canopy.

For the Agricultural Area, a variety of trees were selected for their ability to produce food in the local climate. These trees are not being managed as urban forest trees, but for comparative educational examples of food types.

The new trees have been purchased and donated for the Agricultural Area. About 23 kinds of citrus, 6 avocado varieties, and 21 deciduous fruit trees will be planted in Fall, 2012 providing for a diverse agro-ecosystem. Additionally, agricultural conservation measures have been or will be installed. A windbreak-hedgerow planting was begun with a donation from Ken Crowl and planting by Kiwanis volunteers. An additional windbreak row will be interplanted between the existing line of trees. Other measures slated for the Ag area include cover crops, mulch, a grassed waterway, raptor nest boxes and bat boxes to interpret integrated pest management, a CIMIS weather station for efficient irrigation demonstration, various irrigation applications, and more.

Twenty interpretive signs have been fabricated to explain agricultural conservation practices, sustainable land use, prime farmlands, and more.

Tree Species to Be Planted

Washington Navel Orange Seedless		
	Bears November – January	
	The most extensively grown citrus fruit in CA by 1900.	
Reed Avocado	Harvest April – December	‘A’ flower type
Fuerte Avocado	Ripens January – May	‘B’ flower type
Hass Avocado	Ripens January - August +	‘A’ flower type
Holiday Avocado aka: XX3 developed by University of CA		
	Ripens August – December	‘A’ flower type
Pinkerton Avocado	Ripens January - May	‘A’ flower type
Stewart Avocado	Ripens October – December	‘A’ flower type (sometimes A + B)
Dorsett Golden Apple	Harvest June- July	
Fuji Apple	Harvest in October	
Pink Lady Apple aka: Cripps Pink		
	Harvest October – November	
Anna Apple	Harvest July	

Gold Kist Apricot	Harvest June	Self-fruitful
Earli Autumn Apricot	Harvest August	
Cot-N-Candy Aprium ® (apricot X plum hybrid)		
	Harvest June	Self-fruitful
Minnie Royal Cherry	Harvest May	Pollenized by Royal Lee
Royal Lee Cherry	Harvest May	Pollenized by Minnie Royal
Mid Pride Peach	Harvest July	
Eva's Pride Peach	Harvest June - July	
Bella Gold Peacotum ® (peach x apricot x plum)		Semi-dwarf
	Harvest July – August	Pollenized by Flavor
Grenade Pluot		
Beauty Plum	Harvest June	
Santa Rosa Plum	Harvest June – July	
Flavor King Pluot® (predominately plum X apricot)		
	Harvest in August	
Flavor Grenade Pluot	Harvest in September	
Dapple Dandy Pluot	Harvest in August	
Desert Dawn Nectarine	Harvest May	
Arctic Star White Nectarine	Harvest June	
Panamint Nectarine	Harvest July – August	
Spice Zee Necta-plum ®	Harvest late July – early August	
Oroblanco Grapefruit	Bears December – March	
	Seedless, sweet. UC Riverside hybrid	
	(white grapefruit X sweet pummelo)	
Star Ruby Grapefruit	Bears February – June	Pink flesh and rind
Eureka Lemon Variegated Pink Eureka Lemon aka: Pink Lemonade		
	Bears fruit year-round	
Meyer Lemon	Bears fruit year-round	
Bearss Lime aka: Persian or Tahitian		Seedless
	Bears fruit year-round	
Mexican Lime aka: Key or Bartender's Lime		Thornless variety
	Bears fruit year-round	
Sweet Lime	Bears fruit year-round	

Kishu Mandarin	Bears December – February	Seedless
Pixie Mandarin	Bears February – April Developed at UC Riverside	Seedless
Gold Nugget Mandarin	Bears February - June Developed at UC Riverside	Seedless
Satsuma Mandarin	Bears October-December	
Tango Mandarin	Bears January – March Developed at UC Riverside	
Clementine aka: Algerian tangerine	Bears October – December	
Cara Cara Navel Orange	Bears November – January	Seedless, rosy flesh
Tarocco Blood Orange	Bears December – February	Red flesh
Moro Blood Orange	Bears December – February	Red flesh
Minneola Tangelo	Bears January - March (grapefruit X mandarin hybrid)	
Tavares Limequat	Bears fruit year-round (Mexican lime X kumquat hybrid)	
Meiwa Kumquat	Bears December – June	
Nagami Kumquat	Bears December – June	
Calamondin	Bears fruit year-round kumquat hybrid	
Chandler Pummelo	Bears December – March UC Riverside hybrid	

Management

RCRCD's small staff of seven full-time and three part-time employees each work on some component of implementing the Urban Forest Management Plan. The District Manager is ultimately responsible for overall coordination, budgets, accounting and fund raising. The Board of Directors provides oversight and fiscal review of all district programs and the management of the Resource Conservation Center.

Tree trimming, tree removal and yard mowing is contracted out to local businesses.

The NRCS District Conservationist provides technical assistance regarding conservation applications and installations.

Staff roles:

- The Natural Resource Manager is responsible for coordinating planting and removals on the 6-acre main campus area.
- The Field Technician helps with plant maintenance and will complete planting of much of the LLC with assistance of interns.
- The Resource Conservationist, a certified irrigation auditor, is responsible for installation and maintenance of all irrigation systems.
- The Facility Maintenance Worker installs signs and assists with repairs, etc.
- The Plant Restoration Ecologist is responsible for the care of the Native Habitat Area.
- The Resource Educator promotes the LLC, conducts outreach, and will eventually conduct onsite educational programming.
- The Public Affairs Manager is responsible for coordinating the plans, development, interpretation and educational components of, and outreach for the LLC.

Strategic Plan

6.1 Issues, Needs and Opportunities

The following recommendations and strategies will help address the tree related issues that were identified during the tree survey (Appendix A).

Maintenance and Tree Care Concerns

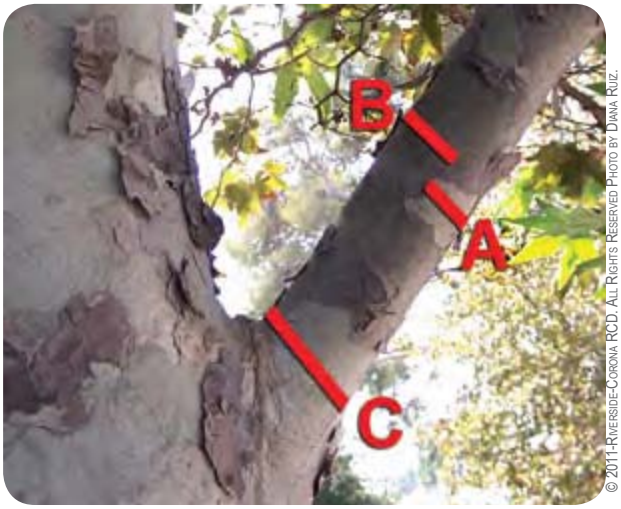
- Many of the young trees need structural pruning for proper form to remove crossing/ rubbing branches, etc. (Arbor Trail)
- Some trees have included trunk bark (especially the Engelmann Oaks), but they are too old to remove one of the stems. However, the form could be corrected by reducing the size on one of the branches to allow the other to become dominant. (Native Habitat Area and overflow parking lot)
- There are two topped/resprouted *Tabebuia impetiginosa* trees that need to be removed and replanted. They will never become viable trees. (Arbor Trail)
- Check tree stakes/ties as some appear to no longer be needed and are damaging trunk bark. (Arbor Trail)
- Some of the trees have poor pruning cuts that should be corrected. (Liquidambars and replace damaged Cercis in front of Building A, etc.)
- Remove basal suckers. (various locations)
- A tree was found girdled by a tag with string. In the future tags and nursery stakes will be removed to prevent girdling and trunk damage. Trees will be identified on a map and tags will be given to the Public Affairs Manager for fabrication of plant ID signs. (Yard 4)

There are some existing problems that will require monitoring:

Previously topped trees develop multiple stems that can become bushy and top heavy requiring greater maintenance (Monitor Aleppo Pine with 4 trunks tree #193).

Cultural Care

- The heritage Deodar Cedar has two broken branches and sparse growth/die back that should be removed. Additionally, the tree seems to be struggling. Removal of the turf grass to the tree drip line and mulching are recommended. (Front lawn)
- Make sure that mulch is placed a foot away from the trunks of trees. When mulch touches trunks it may cause disease and damage.



Irrigation Concerns

- Some trees appear to be stressed from lack of sufficient water.
- Check on the possible over watering of a memorial oak (Arbor Trail).
- Check irrigation systems and redirect spray that may be hitting the trunks of trees.

Strategies for Proper Maintenance

Irrigation systems will be regularly maintained and scheduling adjusted to climatic conditions.

Irrigation systems will be mapped and documented and an irrigation management plan will be developed to assist with scheduling and education.

Plants have been placed in appropriate hydro-zones for efficient water application. Each area is irrigated differently according to species and plant community. For example, in the Native Habitat Area the riparian species require more water and more frequent irrigation, while other native species will die if watered frequently during their summer dormancy. Summer watering is essential for the establishment of all non-native trees, such as along the Arbor Trail and all in the Ag Area.

All tree maintenance will be performed in accordance with current ANSI Standards for Tree Care Operations—Pruning, Trimming, Repairing, Maintaining, and Cutting Brush—Safety Requirements (ANSI Z133.1) and/or current International Society of Arboriculture maintenance standards. See Appendix I for pruning standards.

Only thinning and reduction cuts will be used to prune live trees, with no heading or topping.

Correct climbing methods following the most current safety standards will be used. Spikes will not be used to climb live trees.

Only trained, certified, and insured professionals who follow good arboricultural practices will be hired for any work on public trees.

Newly planted and young trees will be given correct pruning, staking, and mulching and will be irrigated during periods of hot, dry weather. Maintenance of newly planted trees during the first five years will be given priority over maintenance of older trees except in case of hazard.

Proper pruning of young trees provides better long term structure and is easier, cheaper and better for trees.

1. Remove a competing leader. Cut back the less vigorous branch to prevent the development of two leaders.
2. Remove any malformed branch.
3. Remove any crossing branch. It may rub against and damage another branch.
5. Except for trees that have naturally ascending branches, remove any branch growing at a sharp or unnatural angle.
6. Remove any broken or badly damaged branches.
7. Remove lower branches over time.
8. Remove suckers, which can take energy away from desirable growth.
9. Apply 2 to 3 inches of composted mulch at the base of the tree. Mulch should be kept 3-4 inches away from the trunk of the tree.

Source: “Community Tree Plans: A Guide for Tree Commissions and Environmental Advisory Councils” from Penn State.

Planting Issues

- Poor quality container trees were planted. Some were root bound, but many lacked a dominant leader.
- Some tree flares are either too high or too low and should be corrected by either adding or subtracting soil. (Arbor Trail, overflow parking lot). Some trees were planted crooked, too high or too deep by volunteers. Staking and guy wires/tree ties have been unsuccessfully used to try to right the crooked trees. In the future, trees will be planted by staff or volunteers will require greater supervision.

Strategies for Proper Tree Planting

Trees of the proper size will be planted in the given planting area. No trees will be planted in lawns less than 2 feet in width or in planting pits less than 5 feet long by 5 feet wide.

Mulch will be placed around trees in a minimum 3-foot circle and 3-inch depth to protect trees from lawnmower damage and competition from turf; mulch will be kept away from tree trunks.

Newly planted trees will be irrigated regularly during the growing season.

Every removed tree will be replaced with an appropriate tree not likely to cause any problems.

See Appendix G for planting procedures.

Strategies for Proper Tree Selection and Purchase

Trees to be planted will be selected from an expanded tree planting list to be developed.

Planting material will conform to the latest version of the American Standard for Nursery Stock (American National Standards Institute [ANSI] Z60.1). Trees to be planted should be of standard quality or better, and should be true to name and type of their species variety.

See Appendix F for nursery stock selection guidelines.

All facility campus and Urban Area shade trees will have a single, straight trunk. In the Native Habitat and Ag Areas it is appropriate for some trees to have multiple stems as is the case of the natural growth form of some willows or for fruit trees that are pruned for crop production.

Pest and Disease Problems

Monitor trees for health concerns. Consult with a tree health diagnostician if needed.

- The Liquidambar trees have *Xylella*, a bacterial disease that will eventually kill the trees.
  We will contact the California Department of Food and Ag (onsite) to discuss the release of a biological control: a mini-wasp that helps controls the spread the glassy wing sharpshooter, the vector of *Xylella*.
  A tree removal and replacement program is needed to plan for replacement of diseased trees. (near Building B)
- There is bark damage in Carob trees due to rats. Some Carob trees appear to have heart rot. (Parking and fenced plant debris area)
- *Prunus sp*? (near fish tanks) are loaded with white bugs and need to be treated.

Exotic pests are making it increasingly difficult for everyone to maintain tree health. Recently Riverside area citrus trees were treated for the Asian Citrus Psyllid, however the facility has not yet been sprayed.

Liquidambar trees infected with Xylella, a bacterial disease.

Weed and Invasive Issues

- Remove tree sprouts (volunteer seedlings) that are creating a weed and maintenance problem (Palm in Ag Area and Palo Verde near front fence).
- Remove invasive species. (LLC and fence lines). Invasive peppertrees in and adjacent to the Native Habitat Area should be prioritized for removal. All the peppertrees on the campus will eventually be removed, as the facility is adjacent to wildlands: Mt. Rubidoux and the Santa Ana River.
- Two *Sapium sebiferum*, Chinese tallow trees were planted in Arbor Trail before the species was added to the invasive species list. Rather than remove the trees, we will use them to demonstrate incorrect pruning and topping.
- Check the California Invasive Pest Council website at www.cal-ipc.org for updated lists of invasive trees.

Strategies for Analysis and Removal of Trees

The tree inventory and an annual tree assessment will be used to identify sick, diseased, and hazardous trees and conditions. RCRCD will consult with a tree care specialist, if needed. All hazardous trees and conditions will be assessed by at least one qualified arborist using a standard tree risk procedure or evaluation form. Many parts of a tree must be examined when evaluating tree risk. Criteria to consider:

- Large dead branches in the tree
- Detached branches hanging in the tree
- Cavities of rotten wood in trunk and/or major branches
- Mushrooms at base or throughout tree
- Cracks/splits in trunk where branches are attached
- Strong lean of trunk
- Many branches arise from one point on the trunk
- Damaged, broken, injured roots
- Changes in soil level
- Leaves prematurely develop an unusual color or size
- Tree has been topped and/or heavily pruned.

A tree with a majority of dead or damaged foliage, branches, roots or trunk tissue may be determined a hazard and require immediate removal.

An annual work plan for hazardous tree removal and pruning will be developed based on the annual review. Tree removal and pruning will be prioritized based on tree risk and completed in a timely fashion.

Trees will be removed and replaced after serving a useful lifespan. Trees in poor condition for either health or structural reasons will be removed.

Physical Considerations

- Some trees, such as the Chinese Pistache are growing in a confined spaces that could be enlarged by removing pavement, etc. (Behind glass house)
- Remove phone wires that are attached to trees instead of poles.

There are some existing problems that will require monitoring:

- Some trees were planted too close to the storage building near the fence line adjacent to Braemar. The trees are growing under the eaves, so were topped and now are growing like shrubs.
- Some trees have had their roots removed or damaged for parking curbs and a ramp to downstairs Building A. Trees with impacted root systems will be monitored for health and hazard.

For the Urban Area backyard demonstrations, additional food-producing trees will be added in the Sustainable Backyard, and one that may not be suited to the local climate (inadequate chill days for fruiting). If fruiting does not occur, it will be removed and planted with a more appropriate species.

Some tree identification labels have not been developed. A problem has been that some of the trees that were donated were either not labeled or mislabeled. A few trees have been planted without keeping a record of species.

Shade is needed over the amphitheater. RCRCD is considering whether to install sails or plant trees.

All of the Land Use Learning Center trees have been planted within the last 13 years, however, the few existing trees were left and provide a small amount of age diversity. Other trees on the remainder of the complex provide for age diversity.

The selected tree species in the LLC are diverse.

Strategies for Proper Tree Placement and Quality Design

RCRCD will select, situate, and maintain urban trees appropriately to maximize benefits and minimize hazard, nuisance, hardscape damage, and maintenance costs.

The final selection of trees for an important landscape should be made in the field while considering the elements of the landscape. Before any final decision is made about tree planting, all planting sites will be evaluated for soil conditions, safety concerns, and growing space that is limited by utilities, sidewalks, curbs, etc.

A qualified landscape architect, arborist, urban forester and/or other experts knowledgeable about plant materials, will be consulted when planning for tree planting in important landscapes such as the LLC.

Overall, the community forest will contain a diversity of species and ages. This diversity will be achieved by planting a variety of tree species and by removing and replanting a certain number of declining or hazardous trees every year. No more than 15% of the total tree population will be composed of any one species. Older declining trees in poor condition or of poor structure will be removed each year and replaced with newly planted trees.

The tree species chosen for planting, besides meeting design criteria, must be biologically adapted to site conditions and well suited to the level of care it will receive.

Visual clearance for intersections, traffic signs, and traffic signals will be maintained.

6.2 Goals, Objectives and Actions Planned

Goal 1

Establish and maintain optimal levels of tree canopy and understory vegetation to maximize ecosystem benefits provided by the urban forest (maintain air quality, reduce energy use, moderate storm water runoff, support pollination and beneficial insects, provide a pollution-free environment for visitors, and more).

Objective 1.1

Determine current tree canopy cover for total facility and subunits, as each area in the LLC is manage for a different land use. Percent canopy cover in the Native Habitat Area will include large shrubs.

Actions

1.1.1 Apply tree survey to iTree or measure canopy on most current aerial photo.
1.1.2 Compute percentage cover for each area: Native Habitats, Urban Area, Agricultural Area, remainder of campus, and facility in total.

Objective 1.2

Increase canopy cover over the next 20 years at the Land Use Learning Center garden: target goal to be determined, but may be 70% or more (including large shrubs).

Actions

1.2.1 Complete planting of Ag Area.
1.2.2 Continue infill of Native Habitat Area, Arbor Trail and Yard 4 (Sustainable Yard).

Objective 1.3

Increase canopy cover over the next 20 years for the remainder of the facility: target goal to be determined, but may be 40% or more.

Actions

1.3.1 Staff will identify additional planting locations, especially to shade buildings and parking. Determine additional species needed and plant trees.
1.3.2 Install irrigation as needed.

Goal 2

Maintain and conserve appropriate trees in a healthy condition through good management and cultural practices.

Objective 2.1

Develop a tree removal and replacement program for poor tree stock and for diseased, declining, and inappropriate trees.

Actions

2.1.1 Develop parameters and create a rating system for evaluating and prioritizing trees for removal.
2.1.2 Rate trees of concern.
2.1.3 Develop a tree removal program.
2.1.4 Secure funding for tree removal/replacement program.

Objective 2.2

Establish policies for tree selection, care and maintenance based on ISA BMPs and ANSI standards.

Actions

2.2.1 Write/adapt standards. Approve with UFMP.
2.2.2 Write tree stock selection criteria. Approve with UFMP.
2.2.3 Provide and review standards/specs and tree stock selection criteria with staff and contractors.

Objective 2.3

Remove invasive species from the Resource Conservation Center's landscapes.

Actions

2.3.1 Prioritize the removal of invasive species. Complete removal in the LLC before proceeding to the remainder of the campus. Prioritize the more visible species first.
2.3.2 Remove the invasive pepper trees from throughout the campus.
2.3.3 Use the existing *Sapium* trees (in Arbor Trail) as demonstrations of incorrect pruning. Kill the trees, then prune, paint, and label the bad pruning cuts.

Objective 2.4

Monitor and manage trees of the urban forest for pests and disease.

Actions

2.4.1 Exotic pest species are increasingly reaching our area. The California Department of Food and Agriculture (CDFA) staff will provide assistance with pest monitoring. One of the CDFA's research programs in Integrated Pest Management (IPM) is located on the campus.

2.4.2 The District Manager will arrange for the release of a mini-wasp that helps control Pierce's Disease (*Xylella*). Research on the wasp and control of the vector (glassy wing sharpshooter) is conducted onsite by the leasee CDFA.

Objective 2.5
Monitor and manage fruit trees (Ag Area) to control pests and disease.

Actions

2.5.1 The District Manager will arrange for CDFA to treat all citrus to help control the Asian Citrus Psyllid (ACP).

2.5.2 Monitor for Fusarium in avocados and treat as needed.

2.5.3 Staff will work with fruit experts in monitoring the varied crop species. Use IPM, including hedgerow plantings, to limit pests.

2.5.4 The Resource Conservationist will adjust the irrigation scheduling and systems to provide the correct amount of water for plant health and maximum fruit production, without stressing trees which makes them susceptible to disease.

2.5.5 RCRCD staff will visually inspect fruit trees in Ag Area for pests and disease on an ongoing basis.

Goal 3
Establish and maintain optimum diversity in terms of tree species and age.

Objective 3.1
Evaluate and amend approved species list for additional diversity.

Actions

3.1.1 Public Affairs Manager will seek expertise from the urban forest community to expand the species list by August, 2013. Include management considerations and reasons for the selection. Consider establishment of a tree committee to include staff and the broader community.

Objective 3.2
Assess current inventory for age and species diversity.

Actions

3.2.1 Compute the age and species diversity based on the entire 9-acre campus to create a more accurate accounting of the facility's urban forest.
Because of the broad variety of trees and vegetation, species diversity is less of a concern, however, in the LLC portion of the campus, age diversity is limited. Development and planting began in 1999, so most of the trees on that 1/3rd of the property are young. We will maintain the existing ash (near LLC entry) and the old Eucalyptus tree (Glenwood Dr. fence line) for age diversity in the LLC.

Objective 3.3

Develop a priority removal list and a planting plan to replace removal-candidates, inappropriate species, and fill existing vacancies for increasing age and species diversity. Continue with infill over time.

Actions

3.3.1 Prioritize removal sites of hazardous, weedy, invasive trees and those in poor condition. Each year, remove high priority trees as budget allows.

3.3.2 Develop a plan for planting a variety of species over time (How many trees per year, etc.).

3.3.3 Plant new species to replace invasive and weedy species, *Xylella* infested Liquidambers, deteriorating Carobs (Parking Lot), etc.

3.3.4 Continue to infill trees on the campus, and specifically along the Arbor Trail. Plant trees during different decades. If necessary, eventually remove duplicated trees for space to increase diversity.

3.3.5 Begin planting replacement species in advance for areas where trees are slated for removal, instead of waiting for the trees to be removed and then replanting.

Goal 4

Manage the Resource Conservation Center's urban forest efficiently and cost-effectively using the UFMP as a guide.

Objective 4.1

Identify maintenance needs and establish a program to address them.

Actions

4.1.1 Staff members have been assigned monitoring, cleanup and maintenance duties throughout the facility. See Appendix D for areas and assignments. Each person will also monitor his/her area for tree care needs.

4.1.2 Asses all young shade trees for the need to prune for good structure. It is not appropriate to prune all of the trees into shade trees with a single leader. Some native trees in the Native Habitat Area will remain multi-stemmed. Specialized pruning will be used for fruit trees to maximization crop production (in the Ag Area of the LLC).

4.1.3 Trees need to be pruned while young for proper development. Staff will prune young trees for structure. A certified arborist will conduct a training workshop onsite, then trained and qualified volunteers will assist with pruning, under supervision.

Objective 4.2
Monitor for exotic, weedy and undesirable species throughout the facility.

Actions

4.2.1 Each staff member will monitor her/his assigned site for exotic, weedy and undesirable species and inform the District Manager to amend the priority removal list.

Objective 4.3
Develop and implement an Irrigation Water Management plan for the facility.

Actions

4.3.1 The Resource Conservationist and staff will develop an irrigation water management plan with recommended scenarios for each Land Use Area of the LLC.

4.3.2 Regularly adjust the irrigation scheduling and systems to provide the correct amount of water for plant health without wasting water. Install and use smart controllers that monitor climatic factors.

4.3.3 Demonstrate the use of climate monitoring stations in agriculture. Install the CIMIS station in the Ag Area by Spring, 2013.

Objective 4.4
Develop and implement a Wildlife Habitat Enhancement Plan.

Actions

4.4.1 Collaborate with staff and outside biologists to assess and document various uses by wildlife. Conduct seasonal wildlife surveys (pollinator, beneficial insect, bird, mammal, reptile, fish, amphibian, etc.) with outside biologists and citizen scientists. Use for educational programming.

4.4.2 Develop the tree pruning/removal schedule to coincide with tree dormancy or reduced growth period, and to avoid nesting season, approximately February through September, adjusted for weather variations.

4.4.3 Retain dead/dying trees (including Liquidamber) to extend use for cavity nesting birds, unless a hazard develops.

4.4.4 The Resource Educator will monitor for birds during nesting season, while checking onsite nest boxes and report findings to staff.

4.4.5 Install trees, vegetation and other BMPs to enhance habitat based on the Habitat Enhancement Plan.

Objective 4.5
Dispose of dead trees according to their highest and best use.

Actions

4.5.1 If high quality hardwoods are ever to be removed, the wood will be offered to local artisans, including woodcarvers and turners.

4.5.2 Downed trees will be offered to those with mills or chipped for onsite use as mulch.

Objective 4.6
Improve soil quality, prevent erosion and weeds.

Actions

4.6.1 Mulch will be spread over bare soil throughout all growing areas. Mulch shall not touch tree trunks.

4.6.2 Reuse yard waste through composting and amending growing beds with compost.

Goal 5
Secure stable sources of funding for management of the Center's urban forest.

Objective 5.1
Seek and monitor potential sources of funding, including donations, partnerships and grants.

Actions

5.1.1 Use creative solutions to achieve some management goals, such as provide workshops for tree pruning and have the participants help prune.

5.1.2 Partner with Master Gardeners for workshop training in Ag and Urban Areas in the LLC.

5.1.3 Continue program with California School for the Deaf on sustainable backyard management in Yard 4.

5.1.4 Continue Memorial Grove with Kiwanis and solicit design/construction of garden features.

5.1.5 Continue partnership with Delta Bluegrass and S&S Seed for donation of yard-replacement plantings and grassed waterway sod.

5.1.6 Continue to seek donations of chipped wood from local tree trimmers.

5.1.7 Apply for appropriate grants for development, management and educational purposes.

Objective 5.2
Develop a cost-benefit analysis of the economic, social and environmental benefits of the LLC to use as a tool in securing funding.

Actions

5.2.1 Upon achieving targeted canopy cover and as funding becomes availabe, the District Manager will commission a cost-benefit analysis from a local college or by the UC Davis Western Center for Urban Forest Research to include ecosystem service benefits, as well as economic and social benefits.

Goal 6

Determine staffing and coordinate efforts under the direction of the District Manager.

Objective 6.1

Identify staff roles and training needs.

Actions

6.1.1 Each staff member will regularly assess his/her designated area and will document the required care with suggested management approaches, especially in regard to specific irrigation needs and seasonal trimming. Staff will report needs to supervisors at least by February and August for budget plans and plant material purchases.

6.1.2 The Field Technician will complete planting of Ag Area trees with assistance of interns and other staff by December, 2013.

6.1.3 The Field Technician is responsible for maintaining, preparing and completing installations for the Urban and Ag Areas, including grassed waterways by April, 2013. Interns will assist.

6.1.4 The Resource Conservationist is a certified irrigation auditor and is responsible for installation and maintenance of all irrigation systems. The irrigation system in the Ag and Urban Areas will be completed by December, 2013.

6.1.5 The Plant Restoration Ecologist is responsible for the care of the Native Habitat Area. She will work with the Field Technician and Interns on removal, pruning, planting and management of trees and understory plants for the four plant communities on an ongoing basis.

6.1.6 The Facility Maintenance Worker installs signs and assists with electrical, installations and other tasks as needed.

6.1.7 The Natural Resource Manager is responsible for coordinating planting and removals on the 6-acre main campus area. He will assign staff specific duties and inform contractors of standards/specs to follow.

6.1.8 The Public Affairs Manager is responsible for coordinating the plans, development, interpretation and educational components of and outreach for the LLC, with input from staff and outside advisors. This includes the selection of Urban Forest trees and understory vegetation.

6.1.9 Provide staff training on tree care/urban forestry to assist those staff members who work with trees for the improved management of the Resource Conservation Center's urban forest. Explore local and inexpensive sources of training, such as those of the Inland Urban Forest Council

6.1.10 The NRCS District Conservationist assigned to RCRCD will provide technical assistance, such as drain line design and conservation practice Standards and Specifications and review for pick-up drain line installation, grassed waterway, hedgerow planting, critical area planting of berm, etc.

Objective 6.2
The UFMP will be implemented by the District Manager and/or designee/s on an ongoing basis.

Actions

6.2.1 The District Manager has assigned areas of responsibility to each staff member in the maintenance of the facility and development of the LLC according to the staffer's expertise and experience.

6.2.2 The District Manager monitors budget, finances, staffing and billing.

Goal 7
Complete the development of Phase 1 of the Land Use Learning Center, including the installation of all urban forest understory vegetation.

Objective 7.1
Plant additional row of windbreak trees.

Actions

7.1.1 The Public Affairs Manager will seek assistance from the Natural Resource Conservation Service (NRCS) and Plant Restoration Ecologist in identifying native trees and shrubs to plant as a windbreaks and hedgerows between land uses October, 2012.

7.1.2 The Public Affairs Manager will seek plant materials November 2012, and the Field Technician will install December 2012.

7.1.3 The Resource Conservationist will install an irrigation system for windbreak trees and hedgerows by January, 2013.

Objective 7.2
Remove non-native plants in the Native Habitat Area.

Actions

7.2.1 Remove exotic peppertrees (*Schinus molle, Schinus terebinthifolius*) along the Native Habitat Area fenceline.

7.2.2 The Plant Restoration Ecologist will review the original plant list and recommend replacement species by August, 2013.

7.2.3 The Field Technician will replant with native species Fall, 2013.

Objective 7.3
Complete the planting of the Ag area and install BMP demonstrations with interpretive signage.

Actions

7.3.1 The Public Affairs Manager will obtain turf for the grassed waterway November 2013. The Resource Conservationist will install the irrigation system for the plantings and the Field Technician will lay the sod November, 2012.

7.3.2 The Natural Resource Manager will assign staff to install a pick-up line, berm and vegetated slope by March, 2013.

7.3.3 A CIMIS weather station and various types of irrigation will be installed as demonstrations in the Ag Area Spring, 2013.

7.3.4 The NRCS District Conservationist and RCRCD Plant Restoration Ecologist will collaborate with the Public Affairs Manager on selection of cover crop plantings and installation methods for the Ag Area November, 2012. The Field Technician will prepare the site and plant December, 2012.

7.3.5 Raptor and bat boxes will be installed to help interpret Integrated Pest Management (IPM) practices in the Ag Area March, 2013. The Santa Ana Watershed Association (SAWA) will assist with construction and installation.

7.3.6 A filter strip will be installed between the Interpretive Center site and the Ag Area Fall, 2013. A filter strip will clean rain water from the pad and captured from the roof/s of the future building.

7.3.7 The Public Affairs Manager will determine where each Ag Area sign will be placed to coincide with demonstrations. The Facility Maintenance Worker will install the Ag signs that were fabricated from the Department of Reclamation grant.

7.3.8 The Field Technician and interns will mount and install plant ID signs in the Ag Area by January, 2013.

7.3.9 Staff will collaborate on the need for, and installation of additional BMP demonstrations November, 2012.

Objective 7.4

For the Urban Area: establish and interpret additional food producing demonstrations.

Actions

7.4.1 The Public Affairs Manager will collaborate with experts on the development of additional permaculture and living wall demonstrations for Yard 4, the Sustainable Backyard.

7.4.2 The existing nursery stock will be planted, including kiwi and cherimoya. Additional crops, such as blueberries will be planted and managed by staff with possible assistance from volunteers.

Objective 7.5

For the Urban Area: establish comparative grass replacement demonstrations, including native and non-native turf and herbaceous species.

Actions

7.5.1 The Public Affairs Manager will obtain native and non-native plants for the comparative plots. Native demonstrations have been ordered and are awaiting site preparations. She will seek additional assistance from the UC Turf Management Specialist.

7.5.2 The Field Technician will prep the grass-replacement yard by removing/spraying most of yarrow, preparing the soil for planting, installing gopher wire, and laying sod demonstrations and plot dividers with deep separators and weedcloth.

7.5.3 The Resource Conservationist will retrofit the irrigation system, as needed.

Objective 7.6
Develop the Seed Production Field.

Actions
7.6.1 The Plant Restoration Ecologist is responsible for planning and developing the Seed Production Field, a miniature demonstration of a native seed farm. She will coordinate with staff on the installation and irrigation.
7.6.2 The Plant Restoration Ecologist will coordinate with the Public Affairs Manager on the messages, signage and educational components of the Seed Production Field.

Objective 7.7
Complete the Arbor Trail of the Urban Area.

Actions
7.7.1 Add rest spots with benches and drinking faucet.
7.7.2 Add understory plants and sub trails. Label understory plants.
7.7.3 Create 3D exhibits and interactive activities, for example: thermometers in shade and sun July, 2013.

Objective 7.8
Improve the aesthetic appearance at the entrance/focal point and control erosion at entry pad.

Actions
7.8.1 Install temporary erosion control on the bare pad of the future interpretive center site. Spread mulch and seed wildflower/grass mix. Create signs identifying the purpose of the site.

Objective 7.9
Create habitat for regular butterfly/moth presence.

Actions
7.9.1 Plant butterfly host and larval plants as identified by a local entomologist at fence lines surrounding the campus. Install irrigation, as needed. This will also be part of the Habitat Enhancement Plan.

Goal 8

Expand education and outreach programs and foster stewardship of the region's urban forests.

Objective 8.1

Develop and implement education programs, activities and materials for different audiences.

Actions

8.1.1 Develop programming that involves conducting workshops, demonstrations and classes for all ages that get people in to visit the LLC.

8.1.2 Solicit and train a corps of docents to assist as greeters, tour guides, gift shop coordinators, and with field trip activities.

8.1.3 Use the LLC to assist with planning school gardens (RCRCD provides mini-grants). Develop a garden planning guide for teachers.

8.1.4 Use the LLC to train community leaders (i.e.: the County/City Arroyo Watershed Committee) in best practices, including urban forest management, efficient land use, habitat restoration for sensitive species, Low-Impact Development (LID), and more.

8.1.5 Use the LLC to train high school Envirothon and other science teams.

8.1.6 Use the LLC to train and collect data for Citizen Science projects, including tree inventorying, bluebird nestbox monitoring, water quality testing, and pollinator monitoring.

8.1.7 Use the facility to train interns and college classes in tree care, native plant propagation, and more.

8.1.8 Conduct teacher training workshops, including for Project Learning Tree.

8.1.9 Host homeowner and agency workshops in a variety of resource management fields, including urban forestry and tree care, irrigation water management, firescaping, waterwise landscaping, backyard habitat, biological and least toxic pest control, and more.

8.1.10 Develop a short video to introduce the LLC concepts and sustainable possibilities to visitors.

8.1.11 Develop video/s to demonstrate tree care, yard planning, and urban forest considerations for the inland urban environment to be uploaded to the RCRCD website.

8.1.12 Develop hands-on activities, investigations, crafts and stewardship projects for visitors, such as tree measurement, evapotranspiration activities, soil/water testing, filtering air/water, comparing soil textures/colors, animal/plant/weed identification, etc.

8.1.13 Develop and loan curriculum kits with specimens, artifacts, and activity suggestions on the topics of urban forests/trees, agriculture, and four locally important plant communities. Kits will help prepare students for field trips and/or reinforce learning following field trips.

8.1.14 Develop an urban forest power point presentation and additional online learning activities.

8.1.15 Provide visitors with free literature that offers information about plants and resources to help with their sustainable yard management, such as environmentally-friendly yard management techniques.

8.1.16 Artwork for 3 of 4 comprehensive plant-community signs/posters which depict the native plants and animals for each, has been developed by an artist. Species were selected with technical input from a variety of biologists. Posters are provided free to teachers and correlate to the curriculum kits. Complete the fourth poster.

Objective 8.2

Complete and distribute companion publications for the LLC and for educating the community.

Actions

8.2.1 Complete the booklet for the Arbor Trail which will include tree care, yard planning, and urban forestry concepts.

8.2.2 Develop a “Trail Guide” explaining the LLC and its exhibits.

8.2.3 Complete the development of the book “Wildflowers and Important Native Plants of the Inland Empire”.

8.2.4 Complete the development of the book “Beneficial Insects, Bugs and Pollinators of the IE”.

8.2.5 Assess needs and create additional resources/fact sheets to give to visitors at the LLC.

8.2.6 Adapt, print and disseminate (as part of chaparral curriculum kit) the Inland Shrubland Curriculum offered for adaptation by San Diego Nature and Children’s Collaborative.

Objective 8.3

Complete and install signs for the LLC.

Actions

8.3.1 Develop and install an entry sign with map and location flags/signs that label the three land use areas.

8.3.2 Develop and install interpretive signs for Native Habitats and Urban Areas.

8.3.3 Develop and install bird signs for the bird blind and other animal signs/art.

8.3.4 Develop and install small plant ID and BMP signs.

8.3.5 Develop and install illustrative and interactive outdoor exhibits, including one touch-display of different parking lot materials that allow for water percolation, and displays of Native American uses of native plants to be placed near the plants in the Native Habitat Area; etc.

8.3.6 The Natural Resource Manager and Resource Conservationist will collaborate with the Public Affairs Manager to develop a 3D and graphic display with examples of irrigation systems, components and controllers.

Objective 8.4
Begin the creation of some indoor exhibits for future use in the Interpretive Center.

Actions

8.4.1 Commission an insect/bug case, etc.

8.4.2 Work with Native American groups to develop displays with uses of native plants, including arrows, basketry, medicinal, edible, etc.

8.4.3 Work with taxidermists and museum curators to develop indoor natural history and historical displays for touch tables and rolling carts with touch-tables.

Objective 8.5
Develop a promotional campaign that invites the public to visit the LLC.

Actions

8.5.1 Develop press releases and use a variety of promotional outlets including traditional press, magazines, website, newsletters, e-lists of agencies, associations and community groups, and social media (Facebook), etc.

8.5.2 Work with community groups to place LLC on public trail maps, community resource calendars and lists, etc.

8.5.3 Promote the LLC through advertising educational programming that will be held at the LLC, including workshops, demonstrations and classes by staff and/or community partners. For example, through water bill inserts.

8.5.4 Distribute flyers at outreach events, libraries, museums and other community venues.

8.5.5 Distribute PSAs to local radio and TV outlets, including San Bernardino Valley College and Riverside Access TV.

8.5.6 Promote the LLC in field trip guides, the CREEC e-directory, through County Offices of Ed., and school distributions. Offer programs/activities to homeschoolers and parent-participation programs through e-lists.

Goal 9
Plan future projects for Phase 2 development of the Land Use Learning Center.

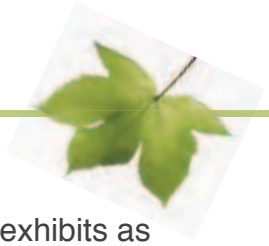
Objective 9.1
Review the original conceptual plans, and plan Phase 2 of the Land Use Learning Center.

Actions

9.1.1 Amend the original bird food-source plans and install the demonstration in the Urban Area. This is being developed for educational purposes, but will be included in the Habitat Enhancement Plan.

9.1.2 Install additional BMPs with signs, as needed.

9.1.3 Begin planning for the Interpretive Center, which will be a green building with museum space, lab, and audiovisual components. Seek partnership of Inland Empire Green Building Council.



9.1.4 Seek funding for the future Interpretive Center and interactive indoor exhibits as grants become available. Continually seek partnerships.

9.1.5 Evaluate the yardscape in front of Building B and develop a plan to use that area as part of the LLC and to revegetate to conserve water. Remove two sides of broken planter (Building B) and mound additional soil around the tree roots out at least to a 2:1 slope, then mulch. Preserve the heritage Iron Bark Eucalyptus and remove the invasive *Schinus molle*.

Goal 10

Preserve and protect onsite heritage trees.

Objective 10.1

Develop a plan to manage the heritage/legacy trees.

Actions

10.1.1 Identify heritage/legacy trees through the inventory data.

10.1.2 Certified Arborist to inspect and evaluate each tree by August, 2013.

10.1.3 Correct problems identified at inspection by December, 2013.

10.1.4 Remove turf from under drip line of heritage trees in turf areas (front yard) and apply mulch by May, 2013.

10.1.5 Even though the Red Iron Bark Eucalyptus is located in the Native Habitat Area, it is to be retained for its heritage and ecosystem values (canopy cover, age diversity, high perch value, etc.) Plant large native shrubs to mask base of tree.

About the Riverside-Corona Resource Conservation District

The Riverside-Corona Resource Conservation District (RCRCD) is a local government agency that works to conserve the natural resources (soil, water, native plants and wildlife) of areas within western Riverside and San Bernardino Counties in southern California.

The District advocates that each acre of land be managed according to its needs and promotes the sustainable use of natural resources for each land-use, including native habitats, urban/ suburban areas, and agriculture.

RCRCD provides resource management assistance to private and public land users and conducts land treatment, education, and volunteer programs. The District works to sustain natural resources in a variety of ways, including:

- Providing onsite technical assistance, such as irrigation system evaluation
- Restoring habitat through the removal of invasive species and reestablishment of native species
- Providing stewardship information and educating broad audiences about natural, urban and agricultural ecosystems.

RCRCD is non-regulatory and self-governing with a five member Board of Directors. The Board retains local administration and direction over programs. The District achieves its conservation goals by coordinating public and private resources and by partnering with “cooperators”, land owners who are interested in conserving natural resources while using or developing property. A cooperator may be an individual land owner, a group, such as Home Owner Association, a business and/or agency.

For more information about this Urban Forest Management Plan, please contact Public Affairs Manager Diana Ruiz at Ruiz@rcrcd.com or (909) 238-8338.

RCRCD

Riverside-Corona Resource Conservation District

Appendices

7.1 Appendix A Tree Survey and Map


N

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector RCRCD (Ruiz, Roger, Sappington)

Date 8/21/2012, waypoints 10/10/2012

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments	Way point
K19	*Schinus sp.*	M	1	3	5		: invasive peppertreeRemove	
J19	*Schinus sp.*	M	1	3	5		Remove	
H19	*Schinus sp.*	M	1	3	5		Remove	
44	*Quercus engelmannii*	7"	2	1	5		Multi (2) with included bark	44
39	*Quercus agrifolia*	6"	1	1	5		Coast Live oak	39
38	*Quercus agrifolia*	4"	1	1	5			38
37	*Quercus agrifolia*	4"	1	1	5			37
36	*Quercus agrifolia*	6"	1	1	5			36
41	*Quercus engelmannii*	7"	1	1	5		Engelmann oak, Multi	41
42	*Quercus engelmannii*	8"	2	1	5		2 leaders with included bark	42
43	*Quercus engelmannii*	6"	2	1	5			43
45	*Quercus engelmannii*	7"	2	1	5			45
40	*Quercus agrifolia*	14"	2	1	5		Double leader	40
47	*Quercus agrifolia*	7"	2	1	5			47
46	*Quercus engelmannii*	10"	2	1	5		Double leader	46
48	*Quercus agrifolia*	6"	1	1	5			48
20	*Salix sp.*	22"	3	1	5		Willow, Multi-trunk	20

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector Ruiz

Date 8/21/2012, waypoints 10/10/2012

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments	Way Point
21	*Quercus engelmannii*	6"	2	1	5			21
22	*Quercus engelmannii*	6"	1	2	5		Multi-trunk; remove westerly trunk	22
23	*Quercus agrifolia*	6"	2	1	5			23
24	*Quercus dumosa*	2"	1	1	5		Scrub oak, N 33D 58' 52.4", W117D 23' 24.1"	24
25	*Eucalyptus sideroxylon*	44"	4	2	5		native Habitat Area. Approx 100 yrs old?	25
26	*Quercus agrifolia*	4"	1	2	5		Water stressed	26
27	*Quercus agrifolia*	12"	1	1	5		Multi-trunk	27
A17	*Schinus molle*				5			
28	*Salix sp.*	5"	2	1	5			28
29	*Umbellaria californica*	2"	1	1	5			29
30	*Quercus agrifolia*	8"	2	2	5		Co-dominant double leader	30
31	*Salix sp.*	17"	2	1	5			31
32	*Alnus rhombifolia*	6"	2	2	5		White alder	32
33	*Salix gooddingii*		3	1	5		Black willow Multi-trunk: 2stems	33
34	*Salix gooddingii*		3	1	5		Multi-trunk: 5 stems	34
J17	*Acer macrophylla*	3"	1	1	5		Big leaf maple	
35	*Querus agrifolia*	7"	1	1	5			35
65	*Salix sp.*	6"	1	1	5			65

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector _____

Date 8/21/2012, waypoints 10/10/2012

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments	Way point
3	*Juglans californica*	18"	2	1	5		Multi w/ 7 stems, SoCal black walnut	3
19	*Platanus racemosa*	7"	2	2	5		Dieback at top	19
5-Apr	*Salix lasiolepsis*	22"	2	2	5		Multi; evidence of termites Need more Arroyo willow	4 & 5
6	*Juglans californica*	14"	2	1	5		Multi	6
7	*Juglans californica*	9"	1	1	5		Multi	7
8	*Quercus agrifolia*	9"	2	1	5		N 53 degrees 58' 52.2", W 117 D 23' 22"	8
9	*Populus fremontii*	12"	3	1	5		western cottonwood	9
10	*Juglans californica*	4"	1	1	5		Multi	10
12	*Juglans californica*	4"	1	1	5		Multi	12
11	*Juglans californica*	4"	1	1	5		Multi	11
13	*Populus fremontii*	11"	3	1	5			13
16	*Salix gooddingii*	5"	1	1	5		Multi	16
15	*Salix gooddingii*	4"	2	1	5			15
14	*Salix gooddingii*	11"	2	1	5		Multi	14
17	*Platanus racemosa*	5"	3	1	5			17
18	*Platanus racemosa*	8"	3	1	5		N 33D 58' 51.8", W 117 23' 21.9"	18

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector RCRCD (Ruiz, Roger, Sappington)

Date 10/10/2012

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
WP 49	*Salix gooddingii*	43''	4	1	5	L	5 Stems- Has a basin that (catches)-? water.
WP 50	*Platanus racemosa*	4"	2	1			Sycamore
WP 51	*Populus fremontii*	9"	2	1			Cottonwood
WP 52	*Salix gooddingii*	8"	2	1			3 multi stem Black willow
WP 53	*Salix gooddingii*	35"	3	1			5 Stems
WP 54	*Populus fremontii*	10"	2	1			
WP 55	*Salix lasiolepis*	32"	1	1			6+/- Stems Arroyo willow
WP 56	*Populus fremontii*	14"	3	1			
WP 57	*Salix gooddingii*	7"	1	1			
WP 58	*Salix gooddingii*	19"	2	1			3 Stems
WP 59	*Salix gooddingii*	31"	2	1			5 Stems
WP 60	*Salix gooddingii*	23"	2	1			5 Stems
WP 61	*Salix gooddingii*	25"	2	1			5 Stems
WP 62	*Salix gooddingii*	12"	2	1			2 Stems
WP 63	*Salix gooddingii*	35"	2	1			5 Stems
WP 64	*Alnus rhombifolia*	5"	1	1			2 Stems
WP 66	*Quercus agrifolia*	10"	2	1			

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector _____

Date 10/10/12

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
WP 67	*Fraxinus uhdei*	26"	4				note: Shamel Ash is known for root damage/poor structure
WP 68	*Chitalpa taskentensis*	5"	1	2	5		N:33, 58', 51.6" W: 117, 23' 21.1" Codominant with Included Bark
WP 69	*Quercus agrifolia*	5"	1	1	5		
WP 70	*Chitalpa taskentensis*	4"	1	1	5		N:33, 58', 51.3" W: 117, 23', 20.3" Suckers need to be trimmed.
WP 71	*Parkinsonia* "Desert Museum"	17"	2	1	5		Hybrid Palo Verde Crossing/ touching branches
WP 72	*Arbutus* 'Marina'	7"	1	1	5		Multi
WP 73	*Prunus dulcis* 'All in one'	6"	1	1	5		Almond. Multi- grafted at 1'/2'
WP 74	*Sapote*	7"					Multi- stemmed
WP 75	*Prunus dulcis almendro* "Garden Prince	3"	1	1	5		Almond, Multi
WP 76	*Pyrus pyrifolia*	3"	1	1	5		Asian Pear
WP 77	*Plum-?*	3"	1	1	5		Sucker at bottom
WP 78	*Prunus persica*	8"	1	1	5		California curl leaf Peach
WP 79	*Tabebuia impetiginosa*	2"	2	1	5		remove and replant
WP 80	*Tabebuia Impetiginosa*	1"	2	1	5		remove and replant
WP 81	*?*	2"	1	2			
WP 82	*Geijera parviflora*	5"	1	1	5		Australian willow
WP 83	*Geijera parviflora*	2"	1	1	5		

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector _____

Date 10/10/12

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
WP 84	*Geijera parviflora*	5"	1	1	5		
WP 85	*Arbutus* 'Marina'	2"	1	1	5		
WP 86	*Tabebuia chrysotricha*	2'	1	1	5		
WP 87	*Tabebuia chrysotricha*	2"	1	1	5		
WP 88	*Chitalpa*	5"	1	1	5		
WP 89	*Chitalpa*	5"	1	1	5		
WP 90	*Arbutus* 'Marina'	2"	1	1	5		
WP 91	*Magnolia g.* 'Little Gem'	1"	1	1	5		
WP 92	*Magnolia g.* 'Little Gem'	1"	1	1	5		
WP 93	*Magnolia g.* 'Little Gem'	1"	1	1	5		
WP 94	*Schinus molle*	45"	3	1	5		Invasive list: Remove 3 Stems
WP 95	*Quercus engelmannii*	1"	1	1	5		Note: species is on CNPS Inventory of Rare and Endangered Plants
WP 96	*Platanus racemosa*		1	1	5		
WP 97	*Cercis occidentalis*	2.5"	1	1	5		
WP 98	*Cercis occidentalis*	1.5"	1	1	5		
WP 99	*Quercus lobata*	3"	1	1	5		
WP 100	*Cercis canadensis*	2"	1	1	5		

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector _____

Date 10/10/12

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
WP 101	*Cercis canadensis*	2.5"	1	1	5		Eastern redbud
WP 102	*Gingko biloba*	1"	1	1	5		
WP 103	*Gingko biloba*	1.5"	1	1	5		
WP 104	*Cercis canadensis*	2"	1	1	5		
WP 105	*Platanus racemosa*	4"	1	1	5		
WP 106	*Quercus agrifolia*	1"	1	1	5		
WP 107	*Quercus virginiana ?*	3"	1	1	5		
WP 108	*Brachychiton populneus*	13"	2	1	5		Codominant (Bottle tree)
WP 109	*Cercis canadensis*	3"	1	1	5		
WP 110	*Laurus nobilis*	2"	1	1	5		
WP 111	*Laurus nobilis*	3"	1	2	5		Bark damage: from stake ?
WP 112	*Laurus nobilis*	4"	1	2	5		Bark Splitting
WP 113	*Quercus engelmannii*	4"	1	1	5		
WP 114	*Pistache chinensis*	6"	1	1	5		
WP 115	*Pistache chinensis*	3"	1	1	5		
WP 116	*Chionanthus retusus*	2"	1	1	5		Chinese fringe tree
WP 117	*Chionanthus retusus*	3"	1	1	5		

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other
Priority 1=1-2 yrs, 2=3-4 yrs, 3=5-6 yrs, 4=7-8 yrs, 5=9-10 yrs

Collector _____

Date 10/10/12

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
WP 118	*Sapium sebiferum/Triadica sebifera*	7.5"	2	1	5		Invasive list: use as bad pruning demo Chinese tallow
WP 119	*Sapium sebiferum/Triadica sebifera*	7.5"	2	1	5		Invasive list: use as bad pruning demo
WP 120	*Mango?*	1"	1	2	5		
WP 121	*Quercus agrifolia*	8"	2	2	5		Over-watered Kiwanis memorial tree?
WP 122	*Pistache chinensis*	3.5"	1	1	5		
WP 123	*Quercus agrifolia*	4"	1	1	5		
WP 124	*Washingtonia robusta*	18" ?	4	1	5		Note: DBH guestimate: Hard to tell due to way it is trimmed/untrimmed
	10/16/12						
125	*Schinus molle*	50"	3	3	5		Peruvian/Calif peppertree
126	*Podocarpus gracilior*	30"	4	1			Fern pine breaking retaining wall: remove front and side walls and mound w
127	*Schinus molle* var? Peruvian		1	1	5		row of Peruvian peppers along fence to remove, approx 5 w/ multi stems
128	*Schinus terebinthifolius* Raddi		1	1	5		Brazillian peppertree to be removed. Hi Priority 1, Invasive multi stem
129	*Cercis canadensis ?*	2"	1	1			sunburn on trunk
130	*Liquidambar styraciflua*	17"	3	1			low priority (5) for removal 5=10 years/not exact, no signal under trees
131	*Liquidambar styraciflua*	19"	3	1			low priority (5) for removal 5=10 years/not exact, no signal under trees
132	*Liquidambar styraciflua*	18"	3	3			Priority 1 (remove 1-2 yrs)
133	*Ligustrum lucidum*	6"	1	1			glossy-leaved privet, multi stem, remove cross branches
134	*Liquidambar styraciflua*	12"	2	2			Priority 2

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch 6= bare soil
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector RCRCD (Ruiz, Roger, Sapp

Date 10/16/12

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
135	*Liquidambar styraciflua*	13"	3	1	2		Priority 4
136	*Plantanus racemosa*	15"	2	1	2		2 stems
137	*Eucalyptus sideroxylon*	43"	3	1	2		Euc. Red iron bark
138	*Quercus agrifolia*	15"	1	1	2		split trunk
139	*Cedrus deodara*	23"	4	2	2		Deodar cedar, 2 broken branches, die-back sparse Remove grass and apply mulch
140	*Cinnamomum camphora*	30"	3	1	2		Camphor tree front yard. (Note: Odd pruning.) Remove grass and apply mulch
141	*Platanus racemosa*	12"	4	1	6		in front of Blg. A
142	*Platanus racemosa*	9"	2	1	6		
143	*Platanus racemosa*	10"	2	1	6		
144	*Cercis occidentalis*	5"	2	3	6		3 stems, split trunk Recommend replacing
145	*Acer japonicum*	2"	1	2	5		Japanese maple, 2 stems memorial for Beverly Howard, former staff Resource Educator
146	*Pinus halapensis*	46"	4	1	5		Large % of roots removed
147	*Liquidambar styraciflua*	16"	3	1	2		by Blg B, priority 4 consider removal at 7-8 yrs
148	*Liquidambar styraciflua*	10"	3	1	2		by Blg B, priority 4 consider removal at 7-8 yrs
149	*Platanus racemosa*	6"	2	1	2		"
150	*Plantanus racemosa*	9"	2	1	5		parking lot Note: planters too small. Root problems if it were asphalt instead of gravel.
151	*Platanus racemosa*	14"	3	1	5		suckers

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector _____

Date 10/16/12

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	
152	*Platanus racemosa*	10"	3	1	5		
153	*Plantanus racemosa*	9"	3	1	5		
154	*Cercis canadensis*	9"	1	1	5		multistem. Adjoining Cercis is a shrub. Replace with a tree for parking shade
155	*Plantanus racemosa*	10"	3	1	5		
156	*Fraxinus velutina*	11"	1	1	5		2 stems Note: Modesto ash is known for short life/high maintenance
157	*Schinus molle* Peruvian	18"	2	1	6		
158	*Pinus radiata*	16"	2	1	5		Monterey pine needs water
159	*Morus sp.*	38"	2	1	5		mulberry: multistemmed
160	*Ceratonia siliqua*	53"	2	1	3		multistem. Carob: check for eventual heart rot, prbl root damage from parking
161	*Ceratonia siliqua*	51"	2	1	3		multistem
162	*Ceratonia siliqua*	20"	1	3	3		multistem. trunk damage, growth reduced
163	*Plantanus racemosa*	7"	2	1	6		
164	*Plantanus racemosa*	3"	1	1	6		
165	*Syagrus romanzoffiana*	11"	2	1	5		Queen palm
166	*Pistache chinensis*	18"	2	1	4		Remove black top
167	*Fraxinus oxycarpa* 'Raywood'	6"	1	1	5		Row of ~ 8 Raywood ash for screen along Breamar fence
168	*Fraxinus oxycarpa* 'Raywood'						row from waypoint 167 to 168

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector _____

Date 10/16&18/2012

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
169	*Cercis occidentalis*		1	1	5		multi stem by nursery
170	*Fraxinus oxycarpa* 'Raywood'	8"	2	1	5		Remove some twisting branches
171	*Cercis canadensis*	4"	1	2	5		Clean up the pruning cut, sunburn
172	*Cercis canadensis*	6"	2	1	5		
173	*Cercis canadensis*	6"	2	1	5		
174	*Fraxinus oxycarpa* 'Raywood'	3"	2	1	5		Drought stressed?
175	*Fraxinus oxycarpa* 'Raywood'	2"	1	1	6		
176	*Schinus molle*	34"	4	1	5		
177	*Parkinsonia*	12"	1	1	5		Hybrid Palo Verde. Multistem Remove crossing branch & branch through fence
178	*Parkinsonia*	4"	1	1	5		volunteer Remove
179	*Parkinsonia*	2"	1	1	5		volunteer Remove
180	*Parkinsonia*	1"	1	1	5		volunteer Remove
181	*citrus*	1"	1	2	5		
182	*Fraxinus*	1"	1	1	5		multistem seedling ash: Remove
183	*Pinus radiata*	12"	2	1	5		Monterey pine
184	*Fraxinus velutina*	15"	2	1	5		multistem
185	*Fraxinus velutina*	17"	2	1	5		multistem

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector _____

Date 10/18/12

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
186	*Quercus agrifolia*	16"	2	1	5		multistem, near fish tanks
187	*Quercus ?*	11"	2	1	5		
188	*Prunus ?*	9"	2	2	5		white circular bugs: loaded
189	*Prunus ?*	1"	1	1	5		
190	*Prunus ?*	2"	1	1	5		
191	*Prunus ?*	3"	1	1	5		
192	*Prunus ? X4*					3	4 Prunus along building near Braemar fenceline
193	*Pinus halapensis*	9"	2	1	5	3	4 trunks: Aleppo pine
194	*Quercus ?*	35"	2	1	5	3	Tin roof
195	*Ceratonia siliqua*	50" +	2	1	5	5	Fence through it. Carob. Rats seen.
196	*Ceratonia siliqua*	40"+	2	1	5	5	inside fence with prunings
197	*Fraxinus velutina*	18"	2	1	6		buried flare
198	*Quercus agrifolia*	1/2"	1	1	6		
199	*Quercus agrifolia*	1"	1	1	5		dirt parking: prune off side stem
200	*Quercus agrifolia*	1"	1	1	5		head back to raise over cars
201	*Quercus agrifolia*	1"	1	1	5		prune off side branches now and stake one vertical
202	*Quercus agrifolia*	1"	1	1	5		careful of changing grade when filling ag area

Tree Sheet Inventory

DBH 1 = <10 in. 2 = 10-20 in. 3 = >20 in.
Ht. Class 1 = <15 ft. 2 = 15 - 30 ft. 3 = 30 - 45 ft. 4 = > 45 ft.
Health 1 = good 2 = fair 3 = poor 4 = dead
Site Cond. 1 = shrubs 2 = grass 3 = paving 4 = bare walls 5 = mulch
Conflicts 1 = pot. Overhead utility 2 = exi. Overhead utility
3 = building/other structure 4 = sidewalk/curb 5 = other

Collector _____

Date 10/18/12

Tree ID	Genus species	DBH	Ht. Cl.	Hlth	Site Con.	Conflicts	Comments
203	*Schinus molle*	43"	1	1	5		Peruvian pepper
204	*Quercus agrifolia*	1"	1	1	5		Remove basal suckers & stakes. Maybe was rootbound: monitor
205	*Quercus agrifolia*	2"	1	1	5		Remove stakes/ties
206	*Quercus agrifolia*	1"	1	1	5		"
207	*Cercis occidentalis*	2"	1	1	5		multistem

7.2 Appendix B Urban Area Plant List

URBAN AREA
of the LandUse Learning Center
Garden Descriptions with Plant Lists and Sustainable Practices

The Urban Area of the Land Use Learning Center includes four themed yards/gardens and an Arbor Walk that demonstrate ways to help sustain natural resources in urban or suburban ecosystems. Sustainable systems utilize the resources that are available, without depleting or damaging them. We invite you to learn new ways to sustain natural resources in your own yard.

The arbors serve as doorways between yards 1-3.

1. HABITAT GARDEN

Adjacent to the Native Habitat Area

The Habitat Garden provides food, water, and shelter for urban-adapted wildlife, such as birds, bats, and lizards. Many of the plants serve as host plants for butterfly larvae or provide nectar for butterflies and nectar-eating birds, such as hummingbirds. The plants are adapted to seasonal irrigation; their main growing season follows the winter rains. They become dormant during the hot, dry conditions of summer.
The yard is graded to capture runoff, reducing the flow of water into storm drains and increasing the amount of water that infiltrates into the soil and percolates below to underground aquifers. Runoff water becomes available for the plants that fringe the basin, reducing the amount of water needed for irrigation.

Scientific Name	**Common Name**	
Achillea millefolium	Common Yarrow	California native
Agastache rupestris	Licorice Mint	
Anigozanthos cultivars	Kangaroo Paw	
Anisacanthus thurberi	Chuparosa	
Buddleja davidii & cultivars	Butterfly Bush	
Buddleja 'Lochnich'	Butterfly Bush	
Caesalpinia pulcherrima	Red Bird-of-Paradise Bush	
Caryopteris x *clandonensis*	Bluebeard	
Chilopsis linearis	Desert Willow	California native
Encelia californica	California Encelia	Local native
Gaillardia x *grandiflora*	Blanket Flower	
Keckiella antirrhinoides	Yellow Bush Penstemon	Local native
Lantana camara cultivars	Spreading Lantana	
Nepeta x *faassenii*	Catmint	
Penstemon cultivars	Penstemon	
Romneya coulteri	Matilija Poppy	Local native
Rudbeckia hirta	Black-Eyed Susan	
Salvia clevelandii	Cleveland Sage	California native
Salvia canariensis	Canary Island Sage	
Salvia greggii	Autumn Sage	
Trichostema lanatum	Woolly Blue Curls	Local native
Vitex angus-castus	Chaste Tree	
Epilobium canum (aka: *Zauschneria canum)*	California Fuchsia	Local native

2. NATIVE GARDEN

The Native Plant Garden incorporates California native plants and cultivated varieties (*cultivars) of natives.This combination creates visual interest throughout the year.These plants are well adapted to local climate and soil conditions, which help achieve a garden that requires little to moderate water and maintenance. As the Native Garden matures, the diversity of plants will provide increased amounts of shade and habitat for urban-adapted birds and beneficial insects. The interior trail is composed of permeable decomposed granite to increase water infiltration and reduce runoff. Note: Cultivar names are within single quotes after the scientific name, e.g., *Ceanothus* 'Concha'.

Scientific Name	Common Name
Abutilon palmeri	Indian Mallow
Arctostaphylos bakeri 'Louis Edmunds'	Louis Edmunds Manzanita
Arctostaphylos 'Howard McMinn'	Howard McMinn Manzanita
Arctostaphylos 'John Dourley'	John Dourley Manzanita
Arctostaphylos insularis 'Canyon Sparkles'	Canyon Sparkles Manzanita
Baccharis pilularis 'Pigeon Point'	Pigeon Point Coyote Brush
Carpenteria californica	Bush Anemone
Ceanothus 'Concha'	Concha Ceanothus
Ceanothus 'Ray Hartman'	Ray Hartman Ceanothus
Ceanothus 'Wheeler Canyon'	Wheeler Canyon Ceanothus
Cercis occidentalis	Western Redbud
Chitalpa taskentensis 'Pink Dawn'	Pink Dawn Chitalpa
Dudleya pulverulenta	Chalk Dudleya
Eriogonum arborescens	Santa Cruz Island Buckwheat
Galvezia speciosa	Island Bush Snapdragon
Heteromeles arbutifolia	Toyon
Hesperaloe parviflora	Red Yucca
Hyptis emoryi	Desert Lavender
Mimulus aurantiacus (longiflorus)	Bush Monkeyflower (AKA: Yellow Bush Monkeyflower)
Parkinsonia 'Desert Museum'	Hybrid Palo Verde
Quercus agrifolia	Coast Live Oak
Salvia greggii	Autumn Sage

*Cultivar: a cultivated race or variety of a plant that has been created or selected intentionally because of its decorative or useful characteristics. It is usually distinct from similar plants and retains those characteristics when propagated.

3. MEDITERRANEAN COURTYARD GARDEN

Adjacent to the Arbor Walk

The Mediterranean Courtyard Garden has more order and geometry in its use of plants, paving, and pathways, and borrows ideas from classic Mediterranean gardens. The garden incorporates a relatively large hardscape (hard surfaces, such as concrete) that reduces the irrigated area. When mature, the row of native Bay trees along the fence line will provide a windbreak for people and shelter for birds.

Scientific Name	Common Name
Arbutus unedo	Strawberry Tree
Arbutus 'Marina'	Hybrid Strawberry Tree
Cistus purpureus	Orchid Rockrose
Cistus x *skanbergii*	Pink Rockrose
Cistus 'Sunset'	Sunset Rockrose
Laurus nobilis	Sweet Bay
Lavandula angustifolia	English Lavender
Lavandula dentata	French Lavender
Lavandula 'Goodwin Creek Grey'	Goodwin Creek Lavender
Lavandula x *intermedia* 'Provence'	Provence Lavender
Lavandula stoechas 'Otto Quast'	Otto Quast Spanish Lavender
Myrtus communis 'Compacta'	Dwarf Myrtle
Osmanthus fragrans	Sweet Olive
Punica granatum 'Chico'	Dwarf Pomegranate
Rosmarinus officinalis	Rosemary
Salvia officinalis	Garden Sage
Distictis buccinatoria	Blood Red Trumpet Vine

4. SUSTAINABLE GARDEN

Yard with large covered patio

The Sustainable* Backyard provides food for people and wildlife.The patio and covered overhead provide a comfortable outdoor room to enjoy the backyard garden. Vegetables and herbs are grown to provide fresh, flavorful, and nutritious foods that require no transportation to and from market, thus reducing the use of non-renewable energy (gasoline) and the subsequent air pollution.The diversity of plants supports a variety of beneficial insects that help control pests. Lawn-substitutes demonstrate alternatives to traditional turf, requiring less water and less energy to maintain. Different types of irrigation systems (pop-up sprayers, rotors, gears, drip) and controllers (timers) demonstrate ways to improve watering efficiency. Composting helps recycle and reuse the trimmings from the yard. The composted waste becomes a rich soil amendment, eliminating the need for purchased, chemical fertilizers. Mulch shades out weeds, reduces evaporation from the soil surface, and creates an environment that is beneficial for soil life and healthy soil.

Scientific Name	**Common Name**
Achillea millefolium	Common Yarrow (lawn-substitute)
Punica granatum 'Wonderful'	Pomegranate (hedge)
Prunus dulcis 'All-in-One'	All-in-One Almond
Prunus persica 'California Curl Free'	California Curl Free Peach
Pyrus pyrifolia 'Tsu Li'	Asian Pear
Prunus 'Royalty'	Royal Apricot
Pistacia verav 'Peters'	Male Pistachio
Pistacia vera 'Kerman'	Female Pistachio
Antigonon leptopus	Coral Vine
Clytostoma calystegioides	Lavender Trumpet Vine
Distictis buccinatoria	Blood Red Trumpet Vine
Hardenbergia violaceae 'Happy Wanderer'	Lilac Vine
Passiflora edulis	Passion Fruit
Trachelospermum jasminoides	Star Jasmine

5. ARBOR WALK

Trees suitable for Inland Empire cities

Select low water-use, low hazard trees to create urban forests that cool and clean the air, reduce runoff, and provide wildlife habitat. Plant low water-use trees and vines that provide shade for your home and yard.

DECIDUOUS

Deciduous trees lose their leaves during the cold winter, going dormant. When placed with the sun in mind, deciduous trees provide cooling shade during summer but do not block out the warming sunrays during winter.

Scientific Name	**Common Name**	
Cercis canadensis	Eastern Redbud	
Cercis canadensis 'Forest Pansy'	Forest Pansy Eastern Redbud	
Chionanthus retusus	Chinese Fringe Tree	
Chitalpa taskentensis 'Pink Dawn'	Pink Dawn Chitalpa	
Ginkgo biloba	Maidenhair Tree	
Pistacia chinensis	Chinese Pistache	
Platanus racemosa	California Sycamore	Local native
Tabebuia chrysotricha	Golden Trumpet Tree	
Tabebuia impetiginosa	Pink Trumpet Tree	
Quercus engelmannii	Engelmann or Mesa Oak	Local native
Quercus lobata	Valley Oak	California native

EVERGREEN

Evergreen trees do not lose their leaves during winter, so provide year-round screening. They are used for windbreaks, privacy, sound barriers, air-filters and for wildlife cover.

Arbutus 'Marina'	Hybrid Strawberry Tree	
Geijera parviflora	Australian Willow	
Laurus nobilis	Sweet Bay	
Magnolia grandiflora 'Little Gem'	Dwarf Southern Magnolia	
Quercus agrifolia	Coast Live Oak	Local native

UNDERSTORY PLANTS

Carex praegracilis	Clustered Field Sedge	Local native sedge
Muhlenbergia rigens	Deergrass	Local native grass
Mimulus aurantiacus var. *puniceus*	Red Bush Monkey Flower	Local native perennial shrub
Cercis occidentalis	Western Redbud	California native: shrub, small tree

SUSTAINABLE PRACTICES

Water: Ways to save in the yard and garden.

- Select local native plants or low water-use plants and group them according to their watering needs (hydrozone).
- Maintain efficient irrigation systems that apply water directly to the soil surface in measured amounts, to penetrate throughout the rooting area of the plant.
- Grade yards to capture runoff water for plant use and to increase water infiltration into underground aquifers. Retention grading may also prevent pollutants, such as pesticides, from flowing over property in runoff and washing into storm drains that ultimately drain to local streams and to the ocean.
- Use "smart" controllers (timers) to apply the correct amount of water for weather conditions, slope, soil type, and plant needs.
- Reduce turf areas to what you truly need for play or pet areas, and replace with low water-use groundcovers or habitat-landscaping.
- If you need turf in your yard, use low water-use varieties.
- Spread mulch to capture moisture, reduce evaporative water loss from the soil surface, and to shade out weeds.

Soil: Build and protect productive topsoil.

- Use compost as a nutrient-rich soil amendment to renew soil. Recycling yard wastes into compost eliminates the flow of green waste to the landfill.
- Spread yard wastes, mulch, or compost to cover the soil surface. Mulch prevents erosion, shades out weeds, and creates a beneficial environment for soil-dwelling organisms. Mulch helps maintain soil moisture, tilth, and fertility.
- Prevent erosion and subsequent sedimentation by maintaining plants. Plant roots hold soil in place, and plant tops reduce the impact of raindrops that dislodge soil particles. When building or planting an orchard, preserve as many native plants and large trees as possible. Identify and fence-off important trees or shrubs to prevent them from being damaged by construction equipment during grading. In areas that do not have to be re-graded, mow or clear surface vegetation, leaving root systems, without disturbing the valuable topsoil (low-impact development). In orchards, disk in future tree rows, across slope, leaving native vegetation as a cover crop for erosion control. For fire-wise landscaping, mow, instead of disk plants, so not to disturb the topsoil.

Wildlife: Invite urban-adapted wildlife into your yard, such as birds, butterflies, bees (important pollinators) and lizards. Provide at least one dependable source of water. They especially enjoy moving-water. Birds like water at differing heights and in a shallow bath (1-2 inch depth) for cooling.

- Provide a variety of native plants and others that mature at different times of the year. Different birds eat different kinds of foods: fruits, seeds and nuts, nectar from flowers, insects.
- Grow plants of varying heights: low growing groundcovers**,** mid-level trees and shrubs, large trees, both deciduous and evergreen. Evergreen trees provide year-round shelter for wildlife.
- Eliminate the use of toxic pesticides and grow a variety of native plants to support biological pest controls: beneficial insects, birds, and bats.
- Native gardens complement, rather than damage, neighboring native habitat.
- Prevent the invasion of exotic weed species into habitat lands by eliminating them from landscaping.
- Learn more about landscaping on the edge of habitat lands by requesting a free copy of "Living on the Edge" from the RCRCD. For information about Inland Empire birds and "birdscaping" see *Backyard Birds of the Inland Empire,* by Sheila Kee, available at libraries or for sale at RCRCD.

Plants: Remove invasive plant species from your landscape and grow native and water-wise plants.

Energy: Reduce, reuse and recycle.

- Plant the right tree for the right location. Plant on the south and west to shade your home.
- Grow your own food to reduce inputs of fertilizers and pesticides and the need for transportation.

**Sustainable: Natural resources are used in ways so they are neither depleted nor damaged. Optimizing the use of resources and minimizing adverse impacts. Simply put: sustainability is using resources so they last forever.*

For more information about sustainable living, request a free copy of *Help Create a Sustainable Community,* or the children's version*, Kids Can,* (both available in English and Spanish), from the Riverside-Corona Resource Conservation District (RCRCD), 4500 Glenwood Dr., Bldg. A, Riverside, CA 92501 or at www.rcrcd.com. Phone: (951) 683-7691 ext 207. If you live adjacent to streams and wildlands, please request a free copy of *Living on the Edge of the Urban-Wildland Interface.* (Revised 3-8-10)

7.3 Appendix C Native Habitat Plant List

NATIVE HABITAT AREA
of the LandUse Learning Center

The Native Habitat Area of the LandUse Learning Center demonstrates four important plant communities of the Inland Empire: coastal-sage-scrub (CSS), chaparral, oak woodland and riparian. The plant lists (following) indicate the local native plant species that are likely to be found in each plant community.

COASTAL SAGE SCRUB

Adjacent to the amphitheater

The *coastal-sage-scrub* (CSS) plant community is unique to Mediterranean climates, the kind we have in western Riverside County. With hot, dry summers, CSS plants are adapted to drought. CSS plants become dormant from summer through fall to survive dry condition and grow during Southern California's mild, wet winters. Typically, CSS shrubs are partly woody, aromatic, and 1-6 feet tall. Many have soft gray-green leaves and relatively shallow root systems. Some drop or curl their leaves to retain moisture.

Scientific Name	**Common Name**	
Allium haematochiton	Red-skinned onion	perennial herb
Allium praecox	Early onion	perennial herb
Artemisia californica	California sagebrush	shrub
Bebbia juncea var. *aspera*	Scabrid sweet bush	shrub
Blumeria crocea	Yellow star	perennial herb
Brickellia desertorum	California brickellbush	shrub
Castilleja exserta subsp. Exserta	Purple owl's clover	annual herb
Corethrogyne filaginifolia var. *virgata* (aka: *Lessingia filaginifolia* var. *filaginifolia)*	Virgate sand aster	shrub
Dichelostemma capitatum subsp. *capitatum* (aka: *Dichelostemma pulchellum* var. *pulchellum)*	Blue dicks	perennial herb
Encelia farinosa	Brittlebush	shrub
Epilobium canum subsp. *canum* (aka: *Zauschneria cana*)	Narrow-leaved fuchsia	perennial herb
Eriogonum fasciculatum subsp. *foliolosum*	Interior California buckwheat	shrub
Eriogonum fasciculatum subsp. *polifolium*	Ashy California buckwheat	shrub
Eschscholzia californica	California poppy	annual herb
Isocoma menziesii var. *vernonioides*	Coastal goldenbush	shrub
Juniperus californica	California juniper	tree
Lotus scoparius subsp. *brevialatus*	Deerweed	shrub
Lupinus bicolor		annual herb
Lupinus sparsiflorus		annual herb
Malacothamnus fasciculatus	Bush mallow	clonal shrub
Mimulus brevipes		annual herb
Opuntia littoralis	Prickly pear	succulent shrub
Opuntia parryi (aka: *Cylindropuntia californica* var. *parkeri)*	Cane cholla, valley cholla	succulent shrub
Opuntia prolifera (aka: *Cylindropuntia prolifera)*	Coastal cholla	succulent shrub
Phacelia distans	Common phacelia	annual herb
Phacelia minor	Wild Canterbury bells	annual herb
Poa secunda subsp. secunda (aka: *Poa scabrella*)	Perennial bluegrass	perennial bunchgrass
Salvia apiana	White sage	shrub
Salvia columbariae	Chia	annual herb
Salvia mellifera	Black sage	shrub
Sambucus mexicana	Mexican elderberry	small tree
Stipa speciosa (aka: *Achnatherum speciosum)*	Desert needlegrass	perennial bunchgrass
Trichostema lanatum	Wooly blue curls	shrub
Trichostema parishii	Mountain blue curls	shrub

CHAPARRAL

Chaparral plant communities grow on hills and hillsides and are predominately composed of evergreen shrubs from 1-15 feet tall. Mature stands of chaparral form dense, closed canopies. Chaparral plants are woody and deep-rooted, often with thick and waxy, or small and shiny leaves.

Species Name	Common Name	
Adenostoma fasciculatum var. *fasciculatum*	Chamise	shrub
Arctostaphylos glauca	Big berry manzanita	shrub
Ceanothus crassifolius var. *crassifolius*	Thick-leaved lilac	shrub
Ceanothus oliganthus var. *oliganthus*	Hairy leaf lilac	shrub
Ceanothus spinosus	Greenbark lilac	shrub
Ceanothus tomentosus subsp. *olivaceus*	Ramona lilac	shrub
Cercocarpus betuloides var. *betuloides*	Ca. mountain mahogany	shrub
Dendromecon rigida	Bush poppy	shrub
Encelia californica	California encelia	shrub
Eriophyllum confertiflorum var. *confertiflorum*	Long-stemmed golden yarrow	shrub
Heteromeles arbutifolia	Toyon, Christmas berry	shrub
Keckiella antirrhinoides subsp. *antirrhinoides*	Yellow bush-penstemon	shrub
Lonicera subspicata var. *denudata*	Southern honeysuckle	shrub, somewhat viny
Lupinus succulentus	Arroyo lupine	annual herb
Malosma laurina	Laurel sumac	shrub
Prunus ilicifolia subsp. *ilicifolia*	Holly-leaved cherry	shrub
Quercus berberidifolia	California scrub oak	shrub
Rhamnus crocea	Spiny redberry	shrub
Rhamnus ilicifolia	Holly-leaved redberry	shrub
Rhus integrifolia	Lemonade berry	shrub
Rhus ovata	Sugar bush	shrub
Yucca whipplei	Chaparral yucca	shrub

OAK WOODLAND

Oak-woodland plant communities are typically found on plateaus, valley floors, foothills, and fault-lines. Oak dominated landscapes have understories of grasslands or coastal-sage-scrub with forbs, leaf litter, and woody debris.

Scientific Name	Common Name	
Quercus agrifolia var. *agrifolia*	Coast live oak	tree
Quercus engelmannii	Engelmann oak	tree
Quercus wislizenii var. *fructescens*	Interior live oak	tree/shrub
Juglans californica var. *californica*	So. Ca. black walnut	tree
Amsinckia intermedia	Fiddleneck	annual herb
Artemisia dracunculus	Tarragon	perennial herb
Atriplex canescens subsp. *canescens*	Fourwing saltbush	shrub
Baccharis salicifolia	Mule fat	shrub
Bromus carinatus	California brome	perennial bunchgrass
Ceanothus leucodermis	Chaparral whitethorn	shrub
Clematis	Virgin's bower	vine
Collinsia heterophylla	Chinese houses	annual herb
Croton californica	California croton	shrub
Cryptantha intermedia	Common cryptantha	annual herb
Elymus glaucus	Blue wildrye	perennial bunchgrass
Ericameria palmeri var. *pachylepis*	Grassland goldenbush	shrub
Filago californica	California fulago	annual herb
Gilia angelensis	Los Angeles gilia	annual herb
Gnaphalium bicolor	Bicolored cudweed	perennial
Gnaphalium californicum	California everlasting	annual/ biennial herb
Lepidospartum squamatum	Scale broom	shrub
Leymus condensatus (aka: *Elymus condensatus)*	Giant wildrye	perennial bunchgrass
Lupinus excubitus var. *hallii*	Hall s bush lupine	perennial shrub
Lupinus truncatus	White flowering currant	annual herb
Melica imperfecta	Small flowered melic grass	perennial bunchgrass
Mimulus aurantiacus (form *longiflorus*) (aka: *Mimulus longiflorus*)	Yellow bush monkeyflower	shrub
Mimulus aurantiacus (form *puniceus*) (aka: *Mimulus puniceus*)	Red bush monkeyflower	shrub
Mirabilis californica (aka: *Mirabilis laevis*)	California wishbone bush	perennial herb
Nassella cernua (aka: *Stipa cernua*)	Nodding needlegrass	perennial bunchgrass
Nassella lepida (aka: *Stipa lepida*)	Foothill needlegrass	perennial bunchgrass
Nassella pulchra (aka: *Stipa pulchra*)	Purple needlegrass	perennial bunchgrass
Nemophila menziesii var. *menziesii*	Baby blue-eyes	annual herb
Pellaea andromedifolia	Coffee fern	fern
Penstemon centranthifolius	Scarlet bugler	perennial herb
Penstemon spectabilis subsp. *spectabilis*	Royal penstemon	perennial herb
Phacelia ramosissima var. *latifolia*	Branching phacelia	perennial herb
Pluchea sericea	Arrow weed	clonal shrub
Rhamnus californica subsp. *californica*	California coffeeberry	shrub
Rhus trilobata	Basket bush	shrub
Ribes indecorum	White flowering currant	shrub
Romneya coulteri	Matilija poppy	perennial herb
Romneya tricocalyx	Hairy Matilija poppy	perennial herb
Sidalcea malvaeflora	Checker mallow	perennial herb
Sisyrinchium bellum	California blue-eyed grass	perennial herb
Solanum xanti	Chaparral nightshade	shrub
Stipa coronata (aka: *Achnatherum coronatum*)	Giant needlegrass	perennial bunchgrass
Scrophularia californica subsp. *floribunda*	California figwort	perennial herb

RIPARIAN

Along the stream

Riparian is defined as "pertaining to the bank of a river". The riparian plant community is found along waterways, from seasonally-wet washes to rivers, in our case, the Santa Ana River. Riparian plants are generally more *water-thirsty* than those of the other southern California plant communities.

The narrow corridor of a stream is a valuable resource in our dry southern California climate. Riparian habitat passes through other plant communities, as water flows from higher elevations to the Santa Ana River.

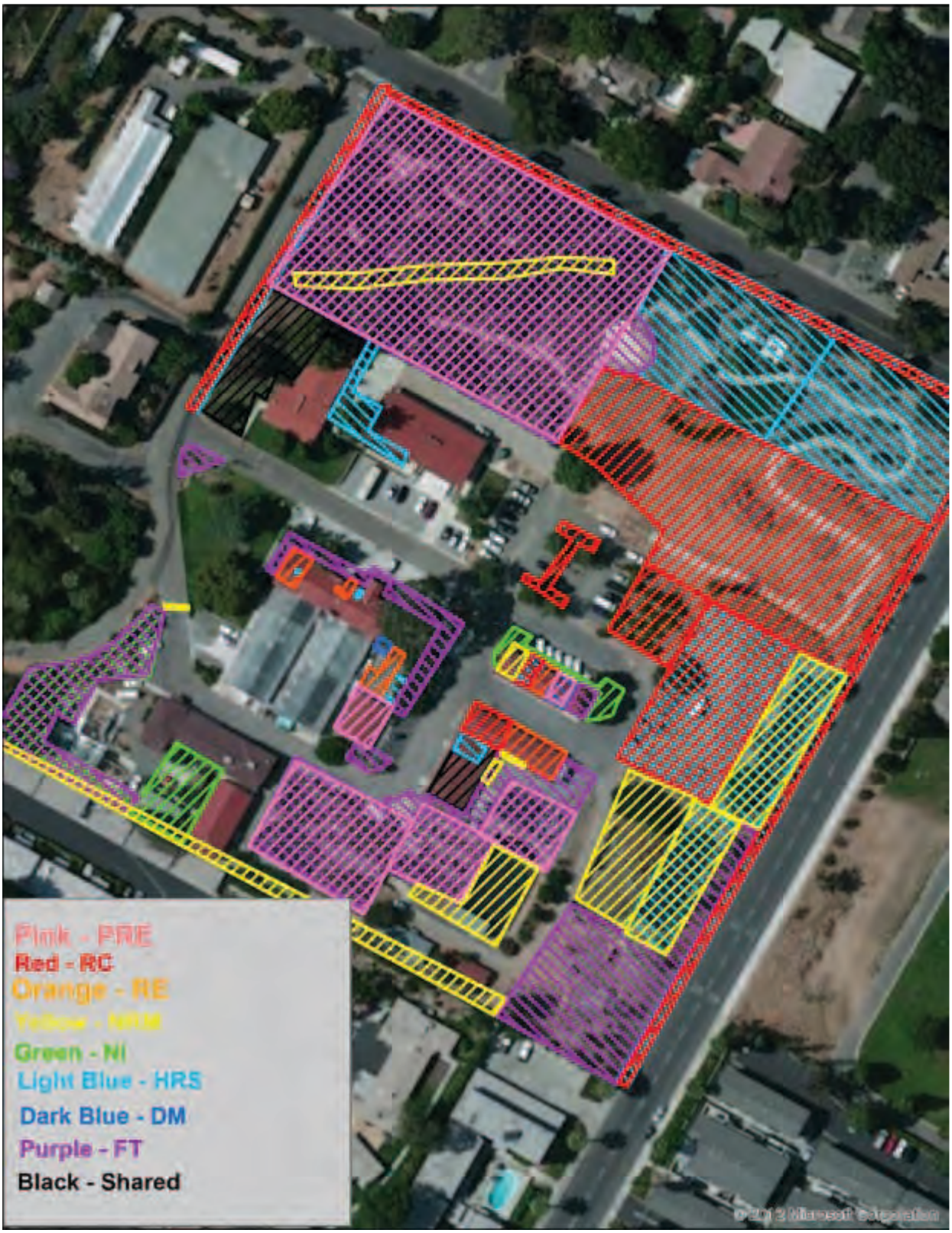
Scientific Name	Common Name	
Acer macrophyllum	Big leaf maple	tree
Alnus rhombifolia	White alder	tree
Platanus racemosa	Western sycamore	tree
Populus fremontii subsp. *fremontii*	Fremonts cottonwood	tree
Quercus chrysolepis	Canyon oak	tree
Salix exigua	Narrow-leaved willow	shrub
Salix gooddingii	Goodings black willow	tree
Salix laevigata	Red willow	tree
Salix lasiolepis var. *lasiolepis*	Arroyo willow	shrub/tree
Umbellularia californica	California bay laurel	tree
Acourtia microcephala (aka: *Perezia microcephala*)	Scapellote	perennial herb
Apocynum cannabinum	Indian hemp	perennial herb
Aquilegia formosa	Columbine	perennial herb
Artemisia douglasiana	Mugwort	perennial herb
Baccharis emoryi	Emory's baccharis	shrub
Baccharis salicifolia	Mule fat	shrub
Bromus carinatus	California brome	perennial bunchgrass
Eleocharis parishii	Parish spikerush	perennial herb
Epilobium ciliatum subsp. *ciliatum*	Green willow-herb	perennial herb
Equisetum laevigatum	Smooth scouring rush	fern
Juncus mexicanus	Mexican rush	perennial herb
Juncus xiphioides	Iris-leaved rush	perennial herb
Mimulus cardinalis	Scarlet monkey flower	perennial herb
Mimulus guttatus	Seep monkey flower	annual or perennial herb
Muhlenbergia rigens	Deergrass	perennial bunchgrass
Oenothera elata subsp. *hirsutissima* (aka: *Oenothera* hookeri)	Great marsh evening primrose	perennial herb
Pluchea odorata (aka: *Pluchea purpurescens)*	Marsh fleabane	perennial herb
Rorippa nasturtium-aquatica	Watercress	perennial herb
Rosa californica	California wild rose	woody vine/shrub
Scripus acutus var. *occidentalis*	Common bulrush	perennial herb
Solidago californica	California goldenrod	perennial herb
Typha latifolia	Cattail	perennial herb
Vitis girdiana	Desert wildgrape	vine
Woodwardia fimbriata	Giant chain-fern	fern

If you live adjacent to streams and wildlands, please request a free copy of *Living on the Edge of the Urban-Wildland Interface* from the Riverside-Corona Resource Conservation District (RCRCD), 4500 Glenwood Dr., Bldg. A, Riverside, CA 92501 or at www.rcrcd.com. Phone: (951) 683-7691 ext 207. To learn more about landscaping with natives, request *Wild About Natives.*

RCRCD provides resource management assistance to private and public landusers and conducts land treatment, education, and volunteer programs to steward natural resources. RCRCD fosters the sustainable use of natural resources for each land-use, including native habitats, urban/suburban areas, and agriculture.

7.4 Appendix D Facility/Staff Responsibility Chart

RCD Responsibility Areas



RCRCD Responsibility Area Chart			(revised 6-25-2012)	DM	District Manager
Person		**Area**		PRE	Plant Restoration Ecologist
PRE				HRS	Habitat Restoration Specialist
		Storage Annex (Tombs) Seed rooms	Keep clean and organized, trash, inventory	FT	Field Technician
		Garage 4	Keep clean and organized	RE	Resource Educator
	With FT	LLC Native Habitat Area (outside stream channel)	weeding, irrigation, gophers, planting, trimming, trash, inventory.	RC	Resource Conservationist
		Nursery Shed	Keep clean and organized	NRM	Natural Resource Manager
		Nursery	setting irrig, minor repairs, gopher duty, inventory, trash, etc.	NI	Nursery Intern
RC				EI	Education Intern
		Throughout facility	Irrigation maintenance and repair for all buildings, landscape areas, parking areas, LLC areas, perimeter areas, etc	MFW	Maintenance Facility Worker
		Throughout facility	Large animal trapping	PAM	Public Affairs Manager
		Garage 9	Keep clean and organized		
		Fruit tree (citrus) grove	weeds, irrigation, gophers, trash, planting, trimming		
		Urban Area	Fountain maintenance		
	With FMW	Facility	Facility Supplies at Home Depot & Fruit Growers Supply		
		Fish Raceways	monitor and maintain raceway pumps		
	With NI	Building F	Open, close, clean and remove trash and recycled materials		
	With HRS	Garage 2	Keep clean and organized		
RE					
		Garages 3, 6, 7, & 8	Keep clean and organized, inventory		
	With Interns	Storage Annex (Tombs) central area and educational outreach storage	Keep clean and organized, trash, inventory	DM	District Manager
		Resource Library	Keep clean and organized, inventory	PRE	Plant Restoration Ecologist
		Copy Room	Keep clean and organized, inventory	HRS	Habitat Restoration Specialist
		Supply Room	Keep clean and organized, inventory	FT	Field Technician
NRM				RE	Resource Educator
		LLC Stream	Maintain water flow, shade control, pump maintenance.	RC	Resource Conservationist
		GATES (manual)	locks, keys	NRM	Natural Resource Manager
	With HRS	Fish Tank enclosures	weeds, trash, take care of toad hut	NI	Nursery Intern
	With HRS	Native Fish Raceways	feeding, check pumps, trash, shade, etc.	EI	Education Intern
		Garage 1	Keep clean and organized	MFW	Maintenance Facility Worker
		Sycamore Trailer	Monitor and maintain irrigation system	PAM	Public Affairs Manager
NI					
		Garages 1-5, 10 & Facility	Empty trash, blow out leaves, stock restrooms and recycling		

		Garage landscaped areas	weeds, irrigation, gophers, trash, planting, trimming		
		Building F	sweep sidewalks, hose off patio area, cobweb removal		
		Building F landscaping	weeds, irrigation, gophers, trash, planting, trimming		
	With FT	See duties assigned with Wendy	weeds, irrigation, gophers, trash, planting, etc in various areas		
HRS					
		Shop fish area	Keep clean and organized, trash		
		Fish Tanks in building A	feeding, cleaning		
		Storage Annex (Tombs) lab	organize, keep clean, trash, inventory		
	With NRM	Native Fish Raceways	feeding, check pumps, trash, shade, etc.	DM	District Manager
		Garage 2	organize stuff	PRE	Plant Restoration Ecologist
DM				HRS	Habitat Restoration Specialist
		Area Responsibility Chart	Maintain	FT	Field Technician
		Sycamore Trailer	Oversight and Administration	RE	Resource Educator
		Storage Annex (Tombs) Administrative files room	Administrative files	RC	Resource Conservationist
FT				NRM	Natural Resource Manager
	With NI	Building A, B & C landscape planters	weeds, gophers, trash, planting, trimming	NI	Nursery Intern
		LLC undeveloped & Agricultural Area	weeds, gophers, trash, planting, trimming	EI	Education Intern
	With NI	Asphlat & gravel parking lots	Weeds, gophers, trash, planting, trimming	MFW	Maintenance Facility Worker
	With NI	LLC Amphitheater & Mulch Demo	Weeds, animal control, maintenance	PAM	Public Affairs Manager
		LLC UG & AB plant inventory	to help Diana update self-guided tour and plant list docs		
	With NI	Eastern Fence from wood fence, south fence line to nursery edge	Weeds, gophers, trash		
	With NI	Shared property line with Braemar	Weeds, trash, planting, trimming		
		Wood fenced area	Weeds, trash, mulching pile for cuttings		
	With NI	LLC Urban Garden (UG)	Weeds, gophers, planting, trimming		
	With NI	LLC Arbor Walk(AW)	Weeds, gophers, planting, trimming, mulching		
	With NI	Outside Perimeter	Weeding and trash		
	With NI	Landscaped area by main gate	Weeds, gophers, planting, trimming		
		Garage 5	Keep clean and organized		
	With NI	Area around small greenhouses	Weeding and mulching		
		Sycamore Trailer	Landscape maintenance	DM	District Manager
	With PRE	Nursery	Setting irrigation, minor repairs, gopher duty, inventory, trash, etc.	PRE	Plant Restoration Ecologist
		Nursery Shed	Organize stuff	HRS	Habitat Restoration Specialist
		LLC Native Habitat Area (outside stream channel)	Weeding, irrigation, gophers, planting, trimming, trash, inventory.	FT	Field Technician
MFW				RE	Resource Educator
		Metal and Woodshop Areas	General maintenance & upkeep	RC	Resource Conservationist

		Junk storage behind shop	General maintenance & upkeep	NRM	Natural Resource Manager
		gravel parking lots	Gravel maintenance & upkeep	NI	Nursery Intern
		Asphalt area behind shop	General maintenance and upkeep	EI	Education Intern
		Indoor lighting bldg. A, B, C, F, shops & seed room	Check/replace bulbs as needed	MFW	Maintenance Facility Worker
	With RC	Facility	Facility supplies at Home Depot	PAM	Public Affairs Manager
		Outdoor lighting	Check/repair lights as needed		
		Fish Raceways	Repair and maintain shade cloth and perimeter fencing		
		Facility	Maintain and repair drains		
		Facility	Maintain rain gutters		
		Facility	Maintain railings		
		Facility	Sign maintenance and repair		
		Fencing	perimeter fence check and repair		
		Restroom	plumbing repairs		
		Seed Room	repairs, plumbing, etc		
		water cartridges	Buildings A & C inspection and replacement		
		LLC Urban Area	Gazebo maintenance and repair		
		LLC Native Habitat Area	Bridge inspection, maintenance and repairs		
		LLC Native Habitat Area	Bird blind inspection, maintenance and repairs		
		Sycamore Trailer	Inspection, maintenance and repairs	DM	District Manager
Shared and/or With Interns				PRE	Plant Restoration Ecologist
		Building A	Lock all doors, turn off A/C, turn off lights, turn off copier and computers, turn on alarm	HRS	Habitat Restoration Specialist
		Breakroom	clean up after lunch or breaks, clean out refrigerator every week	FT	Field Technician
		Building F	Lock all doors, turn off A/C, turn off lights, turn on alarm	RE	Resource Educator
		Garages	Close and lock all garage doors	RC	Resource Conservationist
		Metal & Wood Shops	Lock all doors, turn off fan or A/C, turn off lights	NRM	Natural Resource Manager
		Front Gate	Make sure gate closes at 5:00 PM if on facility	NI	Nursery Intern
		Water Line Breaks	Notify Craig and Kerwin	EI	Education Intern
		LLC Urban Area	CSDR raised bed garden	MFW	Maintenance Facility Worker
		Sycamore Trailer	Check trailer and land as assigned	PAM	Public Affairs Manager

*For any problem outside the scope of what you are capable of doing notify a supervisor or, if none can be reached, consult the binder upstairs.

7.5 Appendix E
Fruit Tree Planting Instructions for Volunteers

How to Plant a Fruit Tree

- Dig the hole three times wider than the container and almost as deep as the root ball (measure from bottom of container to surface soil using the shovel handle). Roughen the sides of the planting hole with the shovel.
- Carefully remove the tree handling it by the root ball, not by the trunk or branches. If the tree is stuck, try laying the container on its side and rolling to loosen the rootball.
  Note: IF any roots are circling in the container (root bound), cut off those root ends so they are vertical, not circling.
- If there are apparent branch grafts, turn the tree so the grafts are facing north or northeast away from the predominant sun.
- Place the tree in the center of hole and measure to ensure the trunk flare (area where truck merges with its root system and flares out) is at least an inch above the ground surface level.
- Carefully fill the hole with soil, loosening clods. Do not fill with rocks, grass or debris. Remove large air pockets by lightly tamping the soil with your hands or shovel handle, then fill another layer and tamp, continuing layers to the soil surface. Soil should be firm, not tightly packed. Be sure tree is planted straight and on a small mound so if it settles, the trunk flare or graft will not fall below the soil surface.
- Build soil berms around the base of the tree at the edge of the planting hole to create a basin. Fill the basin with water.
- Spread a 3" layer of chipped wood mulch over the entire area, but not within 6 inches of the tree trunk. Bark should not touch trunk. Spread mulch between tree rows also.
- After the water soaks in, continue refilling the basin.
- Come back to visit your tree and enjoy the fruits of your labor!

7.6 Appendix F Selecting Nursery Stock Guidelines

Container material is the most common type of nursery stock in California and is preferable for planting at the Resource Conservation Center. Planting bare root tree stock in the winter is an alternative.

Selecting Quality Container Nursery Stock

Trees should meet the following minimum standards. Trees that do not meet these requirements will be rejected. The Riverside-Corona Resource Conservation District retains the right to inspect the root mass from a sample tree of each species. Extra provisions may be necessary in project contracts to notify nurseries of this requirement.

Tree planting specifications for selection of quality tree stock shall be as follows:

- All trees shall be true to type or botanical name as ordered or shown on planting plans or contract orders.

- All trees shall have a single, relatively straight trunk with a good taper and branch distribution vertically, laterally, and radially with a live crown ratio (distance from bottom of canopy to tree top/tree height) of at least sixty percent (60%). All branches in the canopy should be less than two-third (2/3) the trunk diameter and free of included bark. The trunk and main branches shall be free of wounds except for properly made pruning cuts, damaged areas, conks, bleeding and signs of insects or disease.

- All trees shall be healthy, have a form typical for the species or cultivar, be well-rooted and pruned as appropriate for the species.

- All trees shall have sufficient trunk diameter and taper so that it can remain vertical without the support of a nursery stake.

- The root ball of all trees shall be moist throughout and the crown shall show no sign of moisture stress.

- The tree shall be well rooted in the soil mix. The point where the topmost root in the root ball emerges from the trunk should be visible at the soil surface of the root ball. When the container is removed, the root ball shall remain intact. When the tree is lifted, the trunk and root system shall move as one.

- All trees shall comply with federal and state laws requiring inspection for plant diseases and pest infestations.

- No tree shall be accepted that has been severely topped, headed back or lion-tailed.

- No tree shall be accepted with co-dominant stems or excessive weak branch attachments that cannot be correctively pruned without jeopardizing the natural form of the species.

- No tree shall be accepted that is root bound, shows evidence of girdling or kinking roots, or has roots protruding above the soil (a.k.a. “knees”).

- No tree shall be accepted that has roots greater than one-fifth (1/5) the size of the trunk diameter growing out of the bottom of the container.

Percolation and Soil Fertility

Prior to planting, the following procedures shall be followed:

- Test the soil for percolation to determine if it drains properly. If it does not drain at least .5 inches per hour, then recommendations should be made to improve drainage, if feasible.

- Check the soil fertility and structure. If the soil is compacted, then it should be physically cultivated and have organic material added. If soil fertility issues are suspected, soil should be tested and approved by the RCRCD staff. Soil remediation measures shall be reviewed and approved by the Natural Resource Manager. All recommendations shall be implemented prior to planting trees.

Sites for New Street Trees

Typically trees will be planted where there is an existing vacancy that is unoccupied, as a replacement tree, or if there is a break in the established street tree pattern that should be filled.

Street Tree Spacing

The following guidelines shall be followed when planting new street trees. The standard street tree spacing is as follows:

- 30'-35' feet on center
- 30' feet from the corner property line
- 20'-25' feet on center for smaller statured trees
- 10' feet from driveway approaches
- 10' feet from light poles
- 5' feet from utility meter boxes

Street trees will not be approved for planting under the following conditions:
The tree would interfere with the growth of other trees in the area.

- The vacant tree well site is overshadowed by other trees nearby creating an unsuitable growing condition for the proposed new tree.
- Utility meters are in the way.
- The tree could block scenic views or views of oncoming traffic.
- The tree is not on the Street Tree Designations List.

7.7 Appendix G Tree Planting Procedures

- All planting locations shall be checked for underground conflicts. It is mandatory that Dig Alert is notified to detect all underground utilities prior to any digging.

- Dig planting holes 2-3 times as wide as the container. The depth of the planting pit shall be equal to the size of the rootball. Place the tree in the planting pit so the trunk flare or the top of the rootball is at least one-half inch to 1 inch (1/2" to 1") above finish grade. In grass covered parkways the top of the rootball shall be higher than the surrounding soil by one-half inch to one inch (1/2" to 1"). In a concrete tree well, the rootball shall be one inch (1") above the level of the finished surface of the surrounding concrete.

- When obtaining a tree from a nursery, always carry the tree by its container or rootball, never by the trunk.

- After removing the tree from the container, cut circling roots and matted roots off the bottom. Check for any circling roots missed during initial inspection. Any roots less than one-third (1/3) the size of the trunk shall be removed with a sharp pruning tool.

- Before placing the tree in the planting pit, examine the root ball for injured roots and the canopy for broken branches. Damaged roots shall be cleanly cut off at a point just in front of the break. Broken branches shall be cut out of the canopy making sure that the branch collar is not damaged.

- Backfill with soil removed from the planting hole. Only add fertilizer or compost if soil analysis indicates it is required. Build a temporary water retention berm four to six inches (4" to 6") high around the root ball area to allow for establishment watering. Immediately after planting the tree, water it thoroughly by filling the water retention basin twice.

- Eliminate all air pockets while backfilling the planting pit by lightly tamping or watering the soil as it is put into the hole. Do not compact the backfill

- All trees shall be staked with two wooden lodge poles and two ties per pole. The minimum diameter of a lodge pole is two inches (2"), but may be larger for 36" and 48" box trees. Place the tree ties at one-third (1/3) and two-third (2/3) of the trunk height. Drive the stake into the ground approximately twenty-four to thirty inches (24" to 30") below grade making sure not to penetrate the root ball.

- Mulch with a two to four inch (2" to 4") layer of mulch where appropriate to conserve soil moisture, provide protection from extreme temperatures and prevent damage from weed eaters. Mulch shall be kept three to twelve inches (3" to 12") away from the tree trunk and shall extend at minimum to the boundary of the water retention basin. It may extend further if desired.

- The soil around the new tree shall be kept moist, but not saturated, by watering at least once a week during the cooler winter months and twice a week during the hot summer months.

7.8 Appendix H Tree Preservation Guidelines

Trees are an essential element of Resource Conservation Center's image and quality of life. Hardscape elements, such as sidewalks, curbs, gutters, and driveways are also indicative of the Riverside-Corona Resource Conservation District's (RCRCD) commitment to maintain its infrastructure. Over the years, broken and damaged sidewalks, curbs, and gutters and driveways will be replaced. As a result, trees will be involved. Whenever possible, curbs, gutters, and sidewalks should be meandered away from the tree thereby providing more growing space for roots. Trees will probably also be impacted during new construction and need to be protected. To manage this process and protect existing trees, the following guidelines have been established:

1. Root Pruning

a. Whenever sidewalk, curb gutter or driveway replacements occurs within four feet of a tree, the site will be inspected by the Riverside-Corona Resource Conservation District for tree impact assessment. Root pruning may be performed on any tree that RCRCD determines can be safely performed without jeopardizing the life of the tree.
b. All roots greater than two (2) two inches in diameter must be cleanly cut to encourage good callus tissue. It is recommended that roots be pruned back to the next root node.

2. Sidewalk Renovation

Trees that would be seriously impacted by root pruning during sidewalk replacements will be inspected by a certified arborist or urban forester in coordination with RCRCD to determine whether:

a. The repair work can be deferred and a temporary asphalt patch used to eliminate any hazard until other steps can be reviewed and implemented.
b. The tree can be saved by narrowing the sidewalk near the tree, while still leaving sufficient sidewalk width for disabled access. Standard disability access width is four (4) feet with variances given to 38 inches where absolutely necessary.
c. The tree can be saved by replacing the sidewalk with minimal disruption of the roots (alternatives: a temporary asphalt sidewalk; rubberized sidewalk; use of root barrier fabric; raising the grade over the roots; and immoral walkway; or other options).
d. To remove the tree and replace it with a minimum 24" boxed replacement tree.

3. Curb and Gutter Replacement

Trees that would be seriously impacted by root pruning during curb/gutter replacement will be inspected by a Certified Arborist or Urban Forester in coordination with RCRCD to determine whether:

a. The repair work can be deferred if it does not create drainage problems or otherwise increase street maintenance unnecessarily and is not a hazard.
b. The tree can be saved by relocating the curb and gutter into the street at lease one foot (ideally two (2) to six (6) feet), thereby narrowing the street width, which in effect may cause the elimination of some street parking.
c. Where six or more trees along one side of a block are severely affected, consideration is to be given to relocating the curb and gutter into the street along the entire block.
d. The tree can be saved by replacing the curb and gutter with minimal disruption of the roots (alternatives: temporary asphalt curb and gutter, use of root barrier fabric: or other similar options).

4. Recovery Period

When significant root pruning on two sides of a tree is required, there will be a 24-month separation between sidewalk and curb/gutter repair to allow time for the tree roots to recover. An exception to this policy may be made if the curb/gutter or sidewalk is relocated away from the tree or other measures are employed that reduce or eliminate root involvement or it is otherwise determined by RCRCD that the root involvement is minimal.

5. Construction Projects

The following guidelines have been developed to protect trees at the Resource Conservation Center during construction projects:

a. A root protection zone shall be defined by a minimum 42” high barrier constructed around any potentially impacted tree. This barrier shall be at the drip line or at a distance from the trunk equal to 6 inches for each inch of trunk diameter 4.5 feet above the ground if this method defines a larger area.
b. Should it be necessary to install irrigation lines within this area, the line shall be located by boring, or an alternate location for the trench is to be established.
The minimum clearance between an open trench and a street tree shall be one (1) foot or six inches for each inch of trunk diameter measured at 4.5 feet above existing grade if this method defines a larger distance. The maximum clearance shall be ten (10) feet. The contractor shall conform to these provisions unless otherwise directed by RCRCD.
c. At no time shall any equipment, materials, supplies or fill be allowed within the prescribed root protection zone unless otherwise directed by the agency.

It is recognized that failure to abide by these provisions will result in substantial root damage to trees that may not be immediately apparent. RCRCD will therefore assess damages according to the International Society of Arboriculture standards and bill the responsible party.

6. Release Requirements

In order for construction work to begin that will impact a tree, a signed release form must be issued by RCRCD. This release shall be based on the condition of the tree and an assessment of the impact of the proposed construction. Mitigation measures necessary to protect the tree will also be stated.

7. Protecting Tree Roots from Vehicular Compaction.

In order to protect our Urban Forest and the Resource Conservation Center's assets; it shall be unlawful for any vehicle to be parked under the drip line of a RCRCD tree in non-paved areas such as parkway strips.

In summary, it is RCRCD's policy to protect its valuable resources and also to provide useable, safe sidewalks, curbs, gutters, and other infrastructure features. Although this policy may cost more in the short run, the long-term solutions will benefit RCRCD both aesthetically and fiscally.

7.9 Appendix I Tree Pruning Guidelines

Need for Pruning

Trees are pruned principally to preserve their health and appearance and to prevent damage to human life and to property. Broken, dead, or diseased branches are pruned to prevent decay from spreading. Live branches are removed to permit penetration of sunlight and air circulation which helps maintain a strong and healthy tree.

All trees of the Resource Conservation Center should be completely pruned on a periodic basis based on species needs. Frequency also depends on funding levels.

Additional tree pruning is done on an “as needed” basis. Specific examples of where ‘”as needed” work is authorized are:

- Pruning tree limbs that interfere with utility lines.
- Pruning tree limbs that interfere with street, parking lot or security light illumination.
- Pruning tree limbs that interfere with buildings or other private or public facilities.
- Pruning hazardous limbs, such as large dead limbs greater than two (2) inches in diameter, hangers, and structurally unsound limbs.
- Pruning tree limbs that interfere with safe vehicular or pedestrian traffic.
- Sucker pruning.

Tree Pruning Specifications

Any tree work performed on a Resource Conservation Center tree must be done according to the specifications outlined here in. There are different criteria for pruning depending on the purpose for the pruning.

- Complete Pruning Specifications are used when the entire tree needs to be fully pruned.

- Safety Pruning Specifications require less pruning and are used when specific, possibly hazardous (dead/dying) limbs need removal to eliminate all safety concerns. Safety pruning may be recommended in some circumstances instead of complete pruning. Safety pruning specifications are used for “as needed” pruning and address only safety concerns. Safety pruning includes only the basic requirements to address the problem.

- Where overhead wires pass through trees, safety and reliability of service demand that tree trimming be done in order that the wires may clear branches and foliage by a reasonable distance. The minimum clearances must be followed as established by the California Public Utilities Commission General Order No. 95.

The following guidelines are designed to maintain required clearance of City trees from high voltage distribution and transmission lines with a minimum of resprouting and fewer pruning cycles. These guidelines are based on the biological response of trees to pruning techniques and should only be used when combined with safe work practices.

Tree growth adjacent to utility lines shall be managed with lateral or directional pruning (thinning cuts). Directional pruning removes a branch from the trunk or large lateral branch growing away from the conductor. Heading cuts are prohibited. Pruning cuts should be determined by structure and branching habit of the species. Branches should not be arbitrarily cut to a pre-established clearance limit.

All trees should be examined for hazards prior to line clearance work. Hangers and dead wood should be removed first. Climbing spikes on live trees is prohibited. Only dead trees may be climbed with spikes. Whenever possible, trees should be allowed to attain a normal height, with the crown developing away from high voltage conductors to develop a V-shaped canopy structure. When foliage loss on a branch exceeds one-half (1/2), it should be removed from the parent stem. Final drop-crotch cuts should be made outside of the branch bark ridge on the main stem or lateral branch. The remaining branch shall be no smaller than one-third (1/3) the size of the branch being removed. The removed portion should be pruned to direct the remaining growth away from the conductors.

The use of multiple small diameter cuts to create an artificially uniform crown form, commonly known as “rounding over,” is not an acceptable pruning practice for utility line clearance.

All specifications are based on International Society of Arboriculture, National Arborist Association, and American National Standards Institute criteria.

The following trimming specifications are for the use of any pruning of Resource Conservation Center trees.

Method of Operation

a. Lightly trim all trees to lighten and balance the trees, removing no more than 15 to 20% of the tree.
b. Remove dead wood and cross branches.
c. Remove all suckers.
d. Remove all diseased branches.
e. Encourage radial distribution of all branches to provide sufficient number of scaffold branches to fill the circular spaces as concentrically as possible around the trunk.
f. Final trimming cuts shall be made without leaving a stub. Cuts shall be made just outside the shoulder ring area. Extremely flush cuts, which produce large wounds and weaken the tree at the cut, shall not be made.
g. All trimming shall provide adequate clearance for any obstructed (street, directional etc.) sign, streetlight, safety light or other approved standard.
h. Over sidewalks, limbs shall be raised a minimum of seven and a maximum of eight feet from grade to wood. Where sidewalks do not occur or are located on the street side of a parkway, limbs may be retained below the minimum elevation as long as they conform to the natural shape of the species.
i. Over residential streets, limbs shall be raised gradually from ten (10) feet to fourteen (14) feet over traffic lanes from grade to wood giving the appearance of an arch rather than an angle. Near driveways where automated refuse containers are placed, it is imperative to have fifteen (15) feet of clearance. (Insert all, some or none if appropriate)
j. Over arterial streets, limbs should be raised a minimum of twelve (12) and a maximum of fourteen (14) feet from grade to wood. A major arterial street may require a higher maximum over central traffic lanes for existing, mature canopy-forming limbs. (Use if appropriate)
k. Whether over sidewalk or street, where the lowest limb is attached to a trunk above the desired elevation but extends below that elevation, if possible, rather than removed all together, in order to avoid giving the trunk a skinned appearance.
l. Trimming shall not exceed the amount necessary to achieve the specified elevation at the time of raising. NO attempt to trim to a higher elevation to allow for future growth shall be permitted.
m. No limb over three inches in diameter will be removed without prior Riverside-Corona Resource Conservation District approval.
n. No lion-tailing. An effect known as “lion-tailing” results from pruning out the inside lateral branches. Lion-tailing, by removing all the inner foliage, displaces the weight to the ends of the branches and may result in sunburned branches, water sprouts, weaken branch structure and limb breakage.
o. Topping, stump cutting, hat raking pollarding, etc. is not acceptable.

Trees with Known Pathogens

Trees with known pathogens that can be spread with pruning tools shall be pruned using additional caution.

Avoid pruning on windy days in order to reduce the transmission of spores - Sterilize tools in between cuts on diseased trees that can be transmitted on pruning tools. Acceptable sterilization methods include fifty percent (50%) bleach solution for ten (10) minutes or handheld butane torch heating for fifteen (15) seconds per side.

Wood with known wood boring insect infestations shall be chipped into pieces smaller than four inches (4") and spread. - Wood that is infected with disease shall be handled and disposed of in a manner that minimizes the possibility of transmission of disease. This may include:

a. Not working on windy days to reduce transmission of spores.
b. Transporting greenwaste in covered containers.

General Staff Requirements

a. **Certified Tree Workers** – All persons performing tree work on Resource Conservation Center trees should be trained according to tree care standards accepted by the International Society of Arboriculture.
b. **Certified to Work Around Electric Lines** – All persons performing tree work on trees in and around primary electrical lines must be trained to do so according to the "Electrical Safety Orders" of the State of California, including all amendments and revisions.

   Line-clearance tree workers shall be trained to work around high voltage conductors. The United States Occupational Safety and Health Act (OSHA) and the American National Standards Institute (ANSI) have established minimum distances to be maintained by tree workers from electrical conductors. All line-clearance work involving City trees shall adhere to these standards as well as the utility pruning standards established by the International Society of Arboriculture (ISA) and the Utility Arborists Association (UAA).

c. **Certified Arborists** – Any contracted tree company shall employ a full-time, permanent Certified Arborist, as accredited by the International Society of Arboriculture. This person is responsible for ensuring that the contractor's crews are performing work according these specifications. This individual must be present along with the crew at all times.

d. **Contractor Qualifications** – All contractors are required to have a state contractor's license for tree work (C-61) and that the contractor adheres to the specifications provide in the bid documents.

General Work Site Requirements

a. Proper disposal of all tree green products generated is required mindful of recycling.
b. Assure good traffic control and minimum disruptions to the public.
c. Assure adequate safety of employees and the public.

Wildlife Avoidance/Migratory Bird Treaty Compliance

The Migratory Bird Treaty Act, the Endangered Species Act and local laws protect birds and wildlife located in trees. An arborist that is also a Certified Wildlife Protector can inspect trees. To minimize conflicts with nests, trees should be inspected carefully for nests and cavities using binoculars prior to pruning.

The recommended criteria shall apply to tree pruning or removal activities to protect wildlife:

- As feasible, trees should be scheduled for removal during non-breeding/non-nesting season. Trees scheduled for pruning or removal during the breeding/nesting seasons shall be visually
i inspected at ground-level.
- If wildlife is located in the tree, the tree shall not be pruned and the Natural Resource Manager shall be notified.

Safety Tree Pruning Specifications

Safety tree pruning shall consist of the total removal of those dead or living branches as may menace the future health, strength and attractiveness of trees. Specifically, trees shall be pruned according to the Tree Pruning Specifications as outlined above.

8.0 Appendix J Tree Care Guide

Quench Your Tree's Thirst: Water Deeply and Regularly.

Since we live in a unique Mediterranean climate with little to no rainfall during the hottest months of the year, it's important to make sure your trees are getting adequate amounts of water at regular intervals. A tree will decline if it isn't provided its minimum requirement of water, becoming susceptible to pests and disease.

Advanced signs of water stress include:

- wilting, curling, yellowing of leaves and browning of leaf edges
- dieback of twigs and branches
- lack of new growth and shoot lengthening in spring.

Because we often grow trees that aren't native to our area, it's important to learn about the differing water needs of landscape trees. Even some of our native trees have higher water requirements, such as those types that would normally grow along a waterway. Find out how trees are rated for water requirements at a website for "Water Use Classification of Landscape Species" (WUCOLS), such as www.wateright.org/site2/reference/wucols_region.asp

Most trees will benefit from summer watering, although a few natives might suffer if watered too frequently. Even drought tolerant trees are more resistant to disease and pests when irrigated a few times during summer. It may be necessary to continue watering into the winter until dormancy or rain arrives. It's also important to increase watering during periods of drought, because trees get less water from rainfall.

"Deeply" refers to getting moisture to the root zone: 2–3 feet down, not just in the top 6–12 inches, as you would for a lawn. (Lawn irrigation is designed to wet only a few inches of soil.) Apply enough water to moisten the soil from the surface down through the root area, which will depend on the tree size.

If you can't tell that the tree has been watered, use a soil probe or dig deep to feel for moisture, but do so away from a young tree's root-ball.

Photo by Aaron Escobar.

What is regular watering? For mature trees, water every 2–3 weeks during the dry season, which varies each year, but approximately May-November. Water-loving trees require more frequent irrigation, as do young trees: water the root-ball area deeply 1–3 times per week to encourage rapid root growth.

If you don't have a separate irrigation line for your trees, try one of these simple methods to water the root zone:

- Let a hose drip for a few hours, moving it around below the tree canopy.
- Coil soaker hose under the tree inside and just outside of the drip line (the outer edge of the canopy of leaves).
- For young trees, build a circular earth berm just outside the drip line and fill the basin with water a few times. Fill with 1–2 inches of water per foot of root zone.

The amount of water needed to replenish the root zone will vary with soil texture. Sandy soils drain quickly, retain less water, and require more frequent irrigations. Soils high in clay hold more than 2 inches of water per foot of soil depth. Many of our local soils are loam, a mixture of sand, silt and clay. For loam, each foot of soil depth holds 11/2–2 inches of water.

Keep spray off tree trunks. For mature trees, focus sprinklers about half way between the trunk and the drip line and spray out to 10–15 feet beyond the drip line.

Mulch slows evaporation and prevents weed growth. Place a layer of wood chips, leaves or partially decomposed compost 2–5 inches deep on the soil surface, under the canopy, but **not** touching the trunk. The tree's own leaf litter can also serve as mulch. Organic mulches hold moisture and create a favorable environment for soil life, including helpful bacteria and earthworms.

Create a Buffer Zone

Remove lawn, groundcovers and weeds at the base of a tree's trunk so the tree won't have to compete for water and nutrients. By eliminating the need to trim grass, you will avoid serious injury to the tree's bark from string trimmers and mowers. Cuts in bark interrupt the transport of nutrients and water and expose the tree to disease and pests.

Staking Young Trees

Young trees may need support if they can't stand straight or if they are being planted in a windy location. Help a young tree to grow straight and vertical by holding it up with pole stakes and rubber tree ties. Drive two rounded stakes into the ground on either side of the trunk, just outside of the original container soil or root-ball. Make sure the stakes are placed perpendicular to the direction of prevailing winds, so when the tree bends with the wind it won't rub against a stake. Attach a separate rubber tree-tie from each stake to the trunk.

Determine how high to attach tree-ties by holding the tree by the trunk upright to see where it begins to bend over. Connect the rubber ties from the stakes to a height of 6-inches above where the trunk begins to bend. Some trees need two sets of tree-ties to develop a stronger trunk. Never use wire for tree-ties.

Photo by Diana Ruiz

What's right with this picture?
The young tree is able to bend with the wind without hitting a stake.

What's wrong?
The suckers and landscape plants are sapping water and nutrients from the young tree and should be removed for optimum tree growth.

Don't let this happen!

Always remove the original nursery stake that comes with the tree, as it is attached too closely to the trunk. The nursery stake is usually narrow and not sturdy enough for long-term support.

When should stakes be removed? It's very common to see trees that are damaged because the tree-ties and stakes were left around the trunk too long. Tree-ties will constrict or cut into the bark and restrict growth. Make sure to remove tree-ties and stakes as soon as the roots and trunk are developed enough for a young tree to stand alone, usually one year or less.

Timing is Everything! The best time to prune a non-native tree is just before spring. A tree coming out of dormancy is able to heal quickly from pruning cuts and nesting birds will not be disturbed.

Photo by Diana Ruiz

Prune for a Purpose

Proper pruning during the first five years may be needed to develop a tree with a strong structure and desirable form. Trees that receive appropriate pruning while they are young will require little corrective pruning when they mature. Because each cut has the potential to change the growth of the tree, no branch should be removed without a reason. First hire a certified arborist or do some research to learn proper pruning techniques. Prune to remove dead, damaged or diseased branches and suckers (shoots from the base of the tree). Remove crowded or rubbing limbs. Prune to eliminate hazards, and to increase light penetration. Routine thinning does not necessarily improve the health of a tree.

See: www.arborday.org/trees/pruning/ and http://ucanr.org/sites/UrbanHort/files/80115.pdf . Certified and consulting arborists use pruning standards (ANSI A300 Part 1) and follow the International Society of Arboriculture (ISA) Best Management Practices. Find tree care specialists at www.isa-arbor.com/faca/findArborist.aspx

Don't "Top" Trees

"Topping" means cutting off the top of the trunk. It also refers to indiscriminate cutting in the middle of the trunk or a limb. Topping won't keep trees small and is self-defeating because it creates bushy, weakly attached limbs, which often grow back higher than the original branches.

In fact, after a deciduous tree is topped, its growth rate increases. In a few years it will be back to the same height, but with hazardous, weakly attached limbs and an unnatural form. The result is actually greater long-term maintenance and cost and reduced value of the tree. In addition, topping stresses a tree making it weak and more vulnerable to pests, disease, death and limb failures.

Resources
www.treesaregood.com
www.isa-arbor.com
www.arborday.org

Tree Databases:
http://selectree.calpoly.edu
www.calflora.org
http://plants.usda.gov
www.bewaterwise.com/Gardensoft/browser01.aspx

Riverside-Corona Resource Conservation District
4500 Glenwood Drive, Building A
Riverside, CA 92501
(951) 683-7691
www.rcrcd.com

Inland Urban Forest Council
PO Box 7444,
Riverside, CA 92513
Email: IUFC2@aol.com
www.inlandurbanforestcouncil.org

Developed by RCRCD with assistance from the Inland Urban Forest Council, including Mark Porter, Dave Roger, Nancy Sappington, Susan Sims and Fred Roth, PhD.
For questions or feedback, please contact Diana Ruiz at jediruiz@aol.com. or 909-238-8338 7-2012

Printed on recycled paper. You can help prevent waste by recycling this newsletter or passing it on to a friend.